JUNE 1958

Traffic Safety

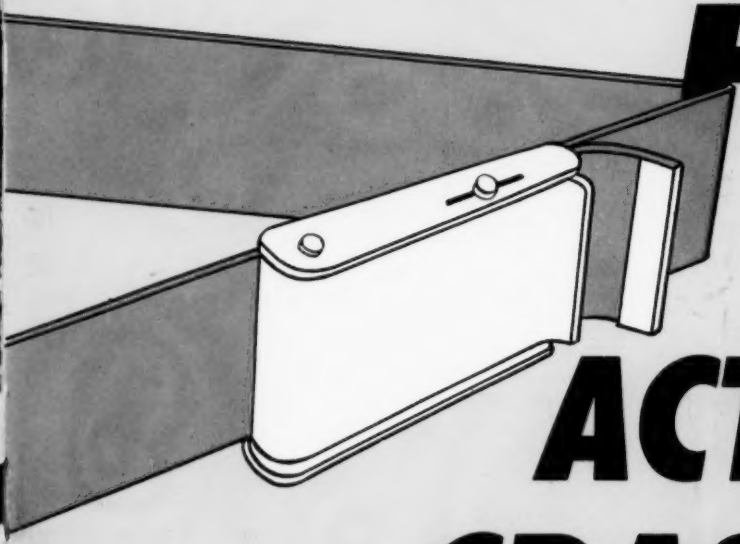
FORMERLY PUBLIC SAFETY

QUARTERLY RESEARCH REVIEW

Technical Section

A NATIONAL SAFETY COUNCIL PUBLICATION

SEAT BELTS HOLD IN ACTUAL CRASHES



Also in this issue:

Report on Midwest President's Conference

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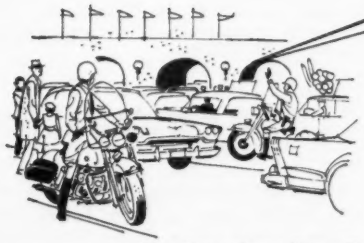
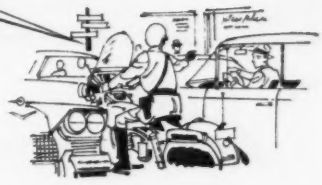


★ Patrolling and controlling traffic

★ Discouraging potential lawbreakers



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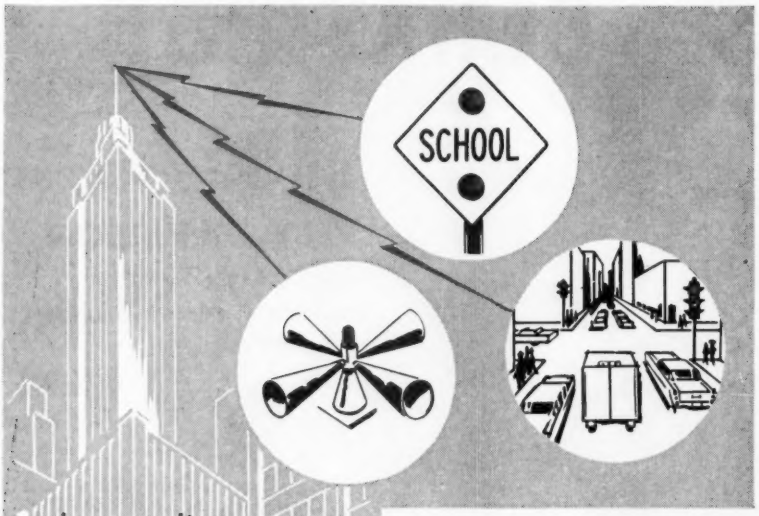

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COMING EVENTS

June 11-12, Bridgeport, Conn.

Thirteenth Annual Connecticut Safety Conference (Stratfield Hotel). A. V. Short, publicity director, 15 King St., Wallingford, Conn.

August 4-5, Denver, Colo.

Women's Seminar for Local Women's Groups (Senate Chambers, State Capitol). Contact H. A. Storey, Colorado Highway Safety Council, Room 14, State Museum Bldg., Denver 2, Colo.

Sept. 12-14, Glenwood Springs, Colo.

Governor's 1958 Teen-Age Traffic Safety Conference. Contact H. A. Storey, Colorado Highway Safety Council, Room 14, State Museum Bldg., Denver 2, Colo.

Sept. 14-19, San Francisco, Calif.

Annual meeting of the American Association of Motor Vehicle Administrators (Fairmont Hotel). Contact AAMVA, 912 Barr Bldg., Washington 6, D. C.

Sept. 15-18, Cleveland, Ohio

Twentieth Annual Ohio State Safety Conference (Hotel Pick-Carter). Contact H. G. J. Hays, secretary-treasurer, 8 East Chestnut St., Columbus 15, Ohio.

Sept. 16-20, Copenhagen, Denmark

Fourth International Study Week in Traffic Engineering sponsored by World Touring and Automobile Organization, 12 Chesham Pl., London, SWI, England.

Sept. 18-19, Rockland, Me.

Thirty-first Annual Maine State Safety Conference (Samoset Hotel). Arthur F. Minchin, secretary, Department of Labor and Industry, State House, Augusta, Me.

Sept. 21-23, Copenhagen, Denmark

1958 International Road Safety Congress sponsored by World Touring and Automobile Organization, 12 Chesham Pl., London, SWI, England.

Oct. 12-17, New Orleans, La.

American Transit Association (Roosevelt Hotel). Contact: ATA, 292 Madison Ave., New York, N. Y.

October 19-21, Chicago

National Teen-Age Safety Leaders' Meeting (Conrad Hilton Hotel). Contact H. A. Storey, executive director, Colorado Highway Safety Council, Room 14, State Museum Bldg., Denver 2, Colo.

Oct. 20-23, Philadelphia

International Municipal Signal Association (Sheraton Hotel). Contact: IMSA, 130 W. 42nd St., New York, N. Y.

Oct. 20-24, Chicago

Forty-sixth National Safety Congress and Exposition (Conrad Hilton Hotel). R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11.

Traffic Safety

FORMERLY PUBLIC SAFETY

A NATIONAL SAFETY COUNCIL PUBLICATION

Volume 52 Number 6 JUNE 1958

TRAFFIC SAFETY is dedicated to the prevention of traffic accidents through the presentation of objective information and responsible opinion to official agencies, public support groups and the motor transportation industry. The views expressed do not necessarily reflect the beliefs or policies of the National Safety Council, but they are presented in the conviction that the pressing social problem of traffic accidents can best be resolved through freedom of expression and open debate.

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NATIONAL SAFETY COUNCIL

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BETWEEN STOPS

WHETHER the sand in the gears of Detroit's production lines is due to a buyer's revolt against the styling and upkeep cost of American cars is not for us to say. Let those more qualified analyze the business slump.

One thing is certain, though—the small imported auto is no longer something to laugh at and plaster with funny signs such as, "Don't step on me—I eat harmful insects." Sales are soaring, and even Detroit is beginning to hedge its bets with European-made models. Quite a few drivers seem to be interested in transportation that will pass fewer cars and more filling stations.

Traffic management people can't help but have their fingers crossed as they wait for the final vote. The private owner who has had to lengthen his garage may voice his personal irritation, but think of the public garage and parking lot owners and the traffic engineers who have seen the nation's parking spaces shrink alarmingly.

TRAFFIC TOLL FOR MARCH LOWEST IN THREE YEARS

Deaths for first quarter of 1958 down 6 per cent from last year. Twenty-nine states show decreases.

CITIES led the way to the lowest March traffic death toll since 1955.

The March tally of deaths was 2,630 for the nation—a reduction of 9 per cent from the March level a year ago. However, the brighter safety picture owes much to cities of 10,000 population or more, which achieved a 14 per cent reduction.

Traffic deaths totaled 2,890 in March last year. In 1955, the toll was 2,602.

March was the fifth month in a row and the 15th out of the last 16 in which traffic deaths totaled the same or fewer than in the corresponding months of the previous year.

For the first quarter of the year, the death toll was 7,730—down 6 per cent from last year's 8,250.

Mileage figures, which lag behind the death report, are available only for January. That month showed a 2 per cent increase in travel, which, coupled with the 5 per cent death decline for the month, resulted in a 5.3 mileage death rate—the lowest January rate on record. The mileage death rate is the number of traffic deaths per 100 million miles of travel.

The death toll was reduced in 31 states in March, as compared with 13 increases and three with no change.

For three months, 29 states showed decreases while 17 had increases and one reported no change.

Cities led the way in March, according to reports from 650 cities over 10,000 population, showing a 14 per cent decrease over March of last year. For three months, these cities showed a 4 per cent decrease from last year.

Cities with fewer deaths in March totaled 125, compared with 101 having more deaths; 424 showed no change (mostly perfect records).

For three months, 184 had decreases while only 178 had increases, with 288 showing no change.

In March, 483 of the 650 cities had perfect records. Of these, the three largest were: Memphis, Tenn., (490,000); Rochester, N. Y., (349,200) and St. Paul, Minn., (313,400).

At the end of three months, 349 of the 650 cities still had perfect records, and of these the three largest were: Hartford, Conn., (188,800); Bridgeport, Conn., (174,200) and Kansas City, Kan., (129,600).

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Leading at the End of March

States				Cities			
Vermont	—65%	Michigan	—15%	Long Beach, Calif.	—70%	Flint, Mich.	—25%
New Hampshire	—64%	New Jersey	—14%	Wichita, Kan.	—67%	Atlanta, Ga.	—24%
Rhode Island	—45%	North Carolina	—14%	Minneapolis, Minn.	—57%	Portland, Ore.	—23%
Delaware	—38%	Wyoming	—13%	New Orleans, La.	—50%	San Antonio, Texas	—19%
Arkansas	—36%	Texas	—11%	Cincinnati, Ohio	—47%	Memphis, Tenn.	—17%
Utah	—32%	Minnesota	—10%	Akron, Ohio	—44%	Los Angeles, Calif.	—16%
South Carolina	—27%	Indiana	— 9%	Toledo, Ohio	—43%	St. Louis, Mo.	—16%
Connecticut	—25%	Oregon	— 9%	Washington, D. C.	—38%	Houston, Texas	—15%
Illinois	—21%	Mississippi	— 6%	Detroit, Mich.	—35%	Dallas, Texas	—15%
Kansas	—21%	California	— 5%	Milwaukee, Wis.	—33%	San Francisco, Calif.	—13%
West Virginia	—21%	Florida	— 5%	Rochester, N. Y.	—33%	Philadelphia, Pa.	—11%
Missouri	—19%	Georgia	— 5%	Dayton, Ohio	—33%	Kansas City, Mo.	— 9%
Wisconsin	—17%	Maine	— 4%	Indianapolis, Ind.	—27%	Cleveland, Ohio	— 8%
Pennsylvania	—16%	Kentucky	— 2%	Providence, R. I.	—25%	Chicago, Ill.	— 6%
		Ohio	— 1%				

Today's Traffic

LOOKING AHEAD

Do-it-yourself traffic signal

A new traffic signal device that enables pedestrians to change the traffic light to green by themselves has been set up at a crossing in Tokyo. An iron pedal that works by a spring is laid close to the curbstone of the sidewalk. When a pedestrian stands on it for 30 seconds the beacon at the opposite side of the street changes to green for approximately 30 seconds and the light for autos turns red.

Automatic toll collector

Drivers entering the new Calumet Skyway, Chicago's gateway to the Indiana Toll Road, can pay their tolls by dropping coins in an automatic device. Tolls range from 25 cents for passenger cars and light trucks up to $1 for the largest trucks. Payment of proper toll, in any combination of coins, changes traffic light from red to green. If the hopper is short-changed, driver is charged with violation of a traffic light if he proceeds. Drivers without exact change pay attendant.

Political twain meets

There's an intersection in Key West, Fla., that has all the earmarks of a dangerous crossing. It's the spot where Truman Ave., and Eisenhower Dr., meet. However, accident records show that it's not a high-accident location.

What, no hitching post?

The designers of a modern 18-acre shopping center in Lancaster, Pa., slipped up on one important convenience—hitching posts. The shopping center is in Amish country. Amish families, who usually travel by horse and buggy, were inconvenienced through their inability to "park." When the oversight was discovered, hitching posts and watering service for the horses were installed.

Give walkers first chance

George Gobel's comment on Save-A-Pedestrian Week: This is the week we ask motorists not to strike pedestrians unless the pedestrians strike first.

International safety day

International Traffic Safety Day was held May 17th in Belgium, France, Holland, Luxemburg and Austria. The overall theme was child safety. Traffic safety authorities in these countries asked motorists to cooperate with the police and school patrol organizations in safeguarding youngsters on their way to and from school.

Parking ruse boomerangs

An Oklahoma City driver tried to outsmart the police by piling snow on the face of the parking meter so that the patrolman could not see if the time ran out. When he returned to his car, he found some snow on the windshield. When he brushed the snow away, he discovered a parking ticket.

Doctors, drugs and driving

Dr. Charles Frankel, University of Virginia Hospital, recently urged physicians who prescribe sedatives, tranquilizers, antibiotics or any drug which temporarily creates a visual or reflex disturbance to warn their patients about driving while under the influence of these drugs. Failure to do so may be construed as negligence and might make the physician liable, Dr. Frankel said.

Seat belt—Swedish style

An automobile safety belt consisting of a chest strap with an emergency clasp has been designed by the State Power Board, Stockholm, Sweden. It has been installed in the agency's 1,000 service vehicles and, according to the board, Swedish auto makers have adopted it as standard.

Overseas traffic doings

Traffic experts and road safety workers from all parts of the world will assemble in Copenhagen, Denmark, from September 16 to 23. Senior officials, engineers and traffic specialists from the greater part of Europe, including the USSR, the United States, Japan and other countries will meet at the Fourth International Study Week in Traffic Engineering. The Study Week will be followed by an International Road Safety Congress.

New Hampshire moves fast

New Hampshire lost no time in actively moving on the priorities recommended by its delegation to the Citizen Leadership Conference of the President's Committee for Traffic Safety. Gov. Lane Dwinell held a meeting of the delegates and other business and civic leaders on April 23 to start the ball rolling for a statewide citizen organization and a statewide traffic safety conference.

Would remove "feuders"

Dr. John C. McCauley, professor of orthopedic surgery at New York University-Bellevue Medical Center, who sees the tragic results of many traffic accidents, believes that the root of the highway accident problem is feuding among motorists. He recommends a strong police force, clearly identified, with authority to order off the road motorists who "bull" their way through traffic and take out ill temper on more timid drivers. He thinks arrest should be secondary to removing the source of the evil from the highway.

CIVIC LEADERS PINPOINT NEEDS

Plan public support priorities at Midwest Conference of President's Committee

FOURTEEN hundred citizen leaders met in Chicago, April 1 and 2, to spearhead public support and set up top priority needs in traffic safety.

These leaders in business, labor, civic, professional, fraternal and religious fields convened for the Midwestern regional meeting of the Citizen Leadership Conference of the President's Committee for Traffic Safety. They met for one purpose —to mobilize organized citizen support for traffic accident prevention measures. Their job was to decide which measures needed attention first.

Representatives were present from 14 states—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Ohio, Oklahoma, Texas and Wisconsin. The Chicago meeting was the second of four to be held throughout the country. The first, for Eastern states, was at Atlantic City, March 11 and 12. (See TRAFFIC SAFETY, May issue.) The third for Western citizen leaders in San Francisco, April 8 and 9, and the fourth in Miami Beach, May 29 and 30, were too late for coverage in this issue.

The Midwestern conference opened with a "President's Breakfast," featuring a recorded message from President Eisenhower and a special film, "The No. 1 Lifesaving Challenge in America Today."

Conference Chairman Calvin Fentress, Jr., chairman of the board, Allstate Insurance Co., welcomed the representatives. He told them that they "should be justly proud that teamwork between private citizens and public officials has demonstrated its effectiveness in reducing traffic fatalities.

"Nevertheless," he said, "accidents and injuries are increasing and we cannot afford to become smug or complacent. A lasting solution to so critical a problem cannot be realized with lax or presumptious leadership. It demands vigorous, forthright action and genuine cooperation."

Gov. William G. Stratton of Illinois urged delegates to formulate definite plans for mobilizing effective public support for traffic safety officials and accident prevention programs. Two other governors—Herschel C. Loveless of Iowa and G. Mennen Williams of Michigan—made presentations at their state sessions.

Harlow H. Curtice, president of General Motors Corp., and chairman of the President's Committee for Traffic Safety, told the conference that "an intensified research program is urgently needed—with special emphasis on driver behavior. But we know enough right now to be able to cut the accident death toll in half within a relatively short time.

"Our fundamental problem," he said, "is not ignorance of what to do. It is failure to get it done on

a sustained nationwide basis. We should concentrate more intensively on putting our knowledge to work, instead of casting about for revolutionary new approaches in the mistaken belief that present measures are futile.

"Our role as private citizens . . . is to encourage and support official functions . . . through the medium of broadly representative and well-directed community safety organizations. They provide the rally point and furnish leadership and coordination for community effort," he said.

Gov. G. Mennen Williams cites ways public can help cut death toll on Michigan's highways.

Following the general meeting, the various state groups split up to discuss the specific state needs. Following these sessions, delegates were free to attend various interest group meetings. Here are some of the highlights of these meetings:

—*Agriculture*—Representatives for some 20 farm organizations agreed that state and county committees of agricultural leadership, affiliated with state and local safety councils, are a good means of achieving public interest and support.

—*Business*—Concensus of businessmen was (1) accident prevention is efficient management, (2) business dollars must back local and state safety organizations, (3) because accidents and congestion produce staggering costs in operations and loss of customers, businessmen should become increasingly active in traffic safety to maintain a prosperous economy.

—*Civic, Professional, Fraternal*—Representatives of 40 organizations concluded that action on the part of their own membership working with public officials has a great potential for community traffic safety.

—*Labor*—More than 70 delegates emphasized the need for establishing safety committees at all levels of union activity.

—*Parents and Women*—Representatives felt that they could make substantial contributions in areas such as pedestrian safety, young drivers, public education and support of officials.

—*Religious*—About 130 religious leaders agreed that accident prevention should be included in church programs as an important moral and spiritual problem. The delegates, representing 35 denominations, stated that (1) church groups should have safety committees, (2) the drinking driver should be hit hard from the pulpit, and (3) the problem of liberty without responsibility is important on the highway as in other walks of life.

Summarizing the work of the conference at the final luncheon, Chairman Fentress praised those who gave their time to attend. "Such a nucleus of informed leadership is bound to do a real job in selling the programs discussed here," he said. "It's basically up to us to broaden public understanding of this salient fact: that every person, every business, every American institution loses needlessly from traffic accidents. The public must be re-

RANK AND FILE LEADERSHIP

THE Chicago conference was different from most safety meetings. It didn't concern itself primarily in ferreting out new methods and techniques for saving lives on our highways. Rather, it was directed at determining how well the formulas already arrived at are being applied.

The experts were at the meeting in sizable numbers. But they made a point of fading into the background. They were available for counsel when asked for counsel—but leadership for the conference was in the hands of rank-and-file laymen.

This was in recognition of the fact that traffic safety—and I assume all other brands of safety as well—is a partnership affair. The professionals have their contribution to make. But the program based on a pooling of the best knowledge and the best experience that can be summoned to the assignment is of no effectiveness until it's put into operation. That's where the public—you and I—come into the picture. What I'm talking about here is called public support.

W. Earl Hall
Editor, Mason City (Iowa) *Globe-Gazette*

GRASS ROOTS STRENGTH
In Parents-Women interest group session, housewives debate compulsory driver education classes.

minded continually that our country's economic and national security are being threatened by the material and physical waste of traffic accidents." Here are brief summaries of the various state sessions:

ILLINOIS—Gov. William G. Stratton cited traffic court reform as a major goal in improving the state's traffic record. Stratton said the courts can be improved by: (1) approving a judicial referendum in the fall election, (2) having courts record all transactions for auditing and (3) training justices who hear traffic cases to assure uniform treatment of violators.

The governor also suggested a statewide agency to enlist civilian support and formal safety education programs in the schools to "assure our future in traffic safety."

The Illinois delegates backed the governor's plea by placing judicial reform first on the list of state needs. Under chairman Adlai H. Rust, president, State Farm Mutual Automobile Insurance Co., the delegates named five other needed measures: (1) public education, (2) new citizen support groups, (3) uniform traffic laws, (4) improved accident reporting and (5) specialized traffic training for police officers.

INDIANA—Increased manpower for traffic enforcement agencies was cited by Albert E. Huber, state director of traffic safety, as Indiana's most urgent need. E. B. Newill, vice-president and general manager, General Motors Corp., led the group discussion.

Delegates asked for sufficient funds for high school driver education, stepped-up highway building and periodic motor vehicle inspection programs. Mayor Ivan Brinegar of Bedford suggested a citizens' support agency to get rid of a "let George do it" attitude. Trained personnel for teaching driver education, more convictions for violations and a periodic motor vehicle inspection program were other city needs.

IOWA—Gov. Herschel C. Loveless outlined a six-point program for his state. Suggestions for controlling the traffic problem included: a secondary road speed limit of 50 mph, an implied consent law requiring chemical tests for drunken drivers, driver education legislation, three-day training conferences for county and city engineers and an increased state police force.

Iowa's most pressing need, according to Russell I. Brown, commissioner, State Department of Public Safety, is "a strong legislative program for traffic safety which is bought and paid for by citizens as a package."

KANSAS—Increasing fees for driver licenses to help finance driver training in high schools was one proposal for solving the Kansas traffic problem. Other suggestions made by Claud R. McCamment, director of safety, Kansas Highway Commission, included re-examining violators before reinstating their licenses, conducting a traffic court survey and increasing highway patrol strength.

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Walter Carey, president of Automobile Carriers, Inc., and chairman of the board, N.S.C.

BUSINESS LEADERS SHOW INTEREST
Harlow H. Curtice (left) discusses traffic problem with Gov. William G. Stratton at opening breakfast.

DISCUSS MORAL ASPECTS OF SAFETY
Rev. John Hondras; Jack Kenna, NSC; Bishop Ezekiel, Greek Archdiocese of North and South America.

SEAT BELTS HOLD IN ACTUAL CRASHES

Study finds only 11 of 712 belts failed in accidents

AUTOMOBILE seat belts have chalked up an amazing record for taking the stress of accident crashes. Cornell University's Automotive Crash Injury research has found that only 11 seat belts involved in 511 accident cases studied failed to function as intended. A total of 712 belts was involved in the 511 accident cases processed.

The researchers observed that, even in the 11 cases of misfunction, the failure to operate as intended could not always be ascribed to structural deficiencies of the belts themselves. Here is a brief description of the types of failure followed by some actual case histories:

Cases of Webbing Failure

Among the 11 cases, there were four in which the webbing parted. Two of these were clear-cut cases in which the webbing of a relatively new belt failed to stand up under impact. In a third case, the webbing which parted had been in use for nine years prior to the accident, and the failure can probably be ascribed to normal deterioration with age. In the fourth case, both the webbing and the floor attachment were reportedly "ground to pieces" by direct impact, when a large tree, impacted at some 50 mph, penetrated the passenger compartment.

Buckle Slippage

Of the two cases where belts slipped through the buckles, one was a case in which the trooper reported that the belt was improperly threaded into the buckle. In the other, a trooper reported that his own buckle failed to hold when his weight was thrown against it, but did not specify whether or not it was properly engaged.

Anchorage Failure

Two cases were reported, one of which also involved parting of the webbing. In both cases, there was considerable evidence that the anchorages were sheared off by direct impact when obstacles struck penetrated the passenger compartment. Both were cases in which there was some question as to whether the accident was technically a "survivable accident," since the passenger compartments of the cars involved were extensively damaged.

Buckled Floor Pan

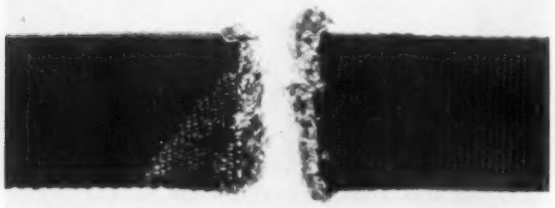
In one case, although the belt held, the floor pan to which it was attached buckled upward about six inches. This is clearly not a case of belt failure, but does indicate the importance of considering the strength of structures to which belts are to be attached.

Webbing Slipped Out of Anchorages

Two cases, both in the same car, were reported. The anchorages were of the triple-slot variety, where the belt is threaded in a precise pattern through the series of slots, and held by friction. Since there are numerous cases on record where such attachments have held, but since the threading pattern must be precisely followed to hold properly, it is at least possible that, in this case, the belts' ends were improperly threaded. This appears especially likely since the two cases of failure were in the same car, and the two belts were probably threaded by the same person.

Special Circumstances

In one case, where design was such that the outer strap of the belt was attached to the *door*, some slack was caught between the door and the seat by mistake. When the door came open, the belt no longer functioned as a seat belt, but became, in effect, merely a door strap. Although the belt remained structurally intact, the occupant was readily ejected.



Case No. 244-0032

Belt webbing cut by transverse bar slots at seat base.

The case car, a 1955 Ford tudor sedan (police model), was passing in center lane, attempting to avoid an oncoming car. The left front third of the car struck the left rear fender of the other vehicle, a 1954 Chevrolet pick-up truck, then skidded across drainpipe and struck a power pole 16 inches in diameter which broke off about 10 feet above the ground. The speed of the case car prior to impact, 70 mph, at impact 45 mph. Speed of the other car before and at impact, 10 mph.

Injuries to driver: None.

Injury to right front occupant: Strained right shoulder and lower back (flexion and torsion). Small bruise in lower torso (pinched by safety belt) and contusion, right knee (glove compartment door).

Case No. 231-0066

Webbing and attachments failed under tree impact.

A 1954 Austin sport roadster missed a curve and crashed into a tree 24 inches in diameter. Traveling speed prior to accident was 70 mph and at impact about 50 mph. The point of impact was the right front side just ahead of the door. The accident is classed as "non-survivable" for the right front seat occupant, with or without safety belt. The right front passenger was thrown out when his belt failed. Fatal skull fracture was ascribed to impact with pavement when ejected.

Injuries to driver: Three inch scalp laceration (windshield). Laceration of right eyelid (windshield) and bruised chest (steering assembly). Contusions—right elbow, right hip, left ankle and chin. Injuries to right front passenger: Six inch laceration and fracture of skull in the right temporal and occipital area. Laceration of throat and lip. Left arm almost severed at shoulder and fractures of both thighs and of the lower left leg.

Case No. 220-0001

Right ends of belts slipped out of floor attachment.

The case car, a 1955 Ford tudor sedan, traveling at 70 mph, went out of control on the right shoulder, then swerved back across the highway into oncoming lane. A 1956 Oldsmobile, two-door sedan, traveling at 55 mph ran into the right fender of the case car. Both cars spun around and left the highway. Doors of case car opened and right front passenger was ejected and killed.

Injuries to driver: Fractured right arm and lacerated right hand (causes unknown).

Right front passenger: Broken neck and unspecified head injuries, fractured left femur. Principal injuries sustained outside the car.

Case No. 226-0003

Right anchorage of belt twisted and broke off.

The case car, a 1953 Studebaker two-door sedan, attempted to dodge a 1947 Plymouth two-door sedan which was on the wrong side of the road. Speed of the case car was 55 mph. Speed of other car prior to impact was 55 mph, at impact, 50 mph. The left front half of the Plymouth plowed along the right side and penetrated the rear seat area. When the floor attachment of the right front passenger's belt parted, he fell against the glove compartment and toppled out of the car.

Injuries to driver: Four inch scalp laceration (windshield). Bruises on chin (upper steering wheel).

Injuries to right front passenger: Deep laceration right shoulder (glove compartment). Minor facial abrasions and contusion of right hand (causes unknown). Contusion of the kidney and hematuria (inside or outside car).

TURN PAGE

Case No. 223-0017

The case car, a 1955 Chevrolet 4-door sedan, was struck broadside on the left front compartment and front fender by the front end of a 1946 Chevrolet pickup truck. Case car subsequently rolled over. Left front and rear doors opened. When webbing broke on seat belt, driver was ejected and killed when car rolled over him. There were no passengers.

Injuries to driver: (Summary coroner's report only). Crushed head, crushed chest, both arms broken.

Case No. 103-0005

The front end of the case car, a 1951 Studebaker 4-door sedan, struck a left front fender of a 1950 DeSoto 4-door sedan at an intersection. Impact speed of case car 20 mph., of other vehicle, 7 mph.

The webbing on the right side of the driver's belt parted about 7 inches from the buckle. Belt was about nine years old, in this car for five years.

Injuries to driver: Laceration, right eyebrow, two broken teeth (rear view mirror) contusions and abrasions both lower legs (instrument panel and steering column).

Injuries to right front passenger: Contusions right and left forehead (struck by driver's chin and thrown against right door window glass, which broke). Contusion right upper arm (door structure). Contusions both lower legs (glove compartment area). Contusion right shoulder blade (cause unknown).

Case No. 104-002

The front end of the case car, a 1954 Tudor Ford struck the side of a 1946 Chevrolet pick-up truck. Speed of case car, 40 mph. Speed of truck, 30 mph. Driver states that buckle did not hold when his weight was applied against it, but nevertheless felt that the belt did afford some protection.

Injuries to driver: Slight bruises and contusions to right knee which struck dashboard. No passengers.

Type of failure: Belt slipped through buckle. Belt attached at floor.

Case No. 212-0001

The case car, a 1952 Cadillac convertible, attempted to pass a truck on an icy road. Speed, between 30 and 40 mph. Driver lost control and car spun about, striking road sign with left side of car and causing left front door to open, despite design of safety belt, which was attached to door and supposed to keep door closed. Driver stated that a slack portion of the belt was doubled up by mistake between door and side of seat, so that when body of car was sprung belt was no longer tight and door came open readily. No part of the belt failed, but the driver was, nevertheless, ejected when the door opened and dragged along a fence of barbed wire and metal posts.

Injuries to driver: Severely mangled left arm from metal posts and barbed wire fence, including compound fracture of humerus and severance of biceps, flexor and adductor pollici brevi muscles and flexor carpi radialis tendon. Contusions of lower torso as result of being dragged by car.

Right front passenger not ejected, was uninjured.

Case No. 220-0012

The left front third of the case car, a 1950 Plymouth 2-door sedan, struck a tree about one foot in diameter. Car turned over on its left side. Speed prior to and at impact was 50 mph. Left front door opened at impact. There were no passengers.

Injuries to driver: Bump on forehead (steering wheel). Minor cuts on face (flying glass). Bruised left elbow (door structure). Bruised left ankle (pinched by seat).

Belt attached to floor.

Type of failure: None—floor pan buckled up about 6 inches at point of belt attachment.

Case No. 244-0045

A 1950 Pontiac 2-door convertible skidded on snowy pavement, went over embankment and struck two 4 inch by 4 inch guard posts. Right front door opened and front seat occupant was completely ejected. Car subsequently rolled over twice. Speed was 45 mph prior to accident, reported as 25 mph at impact. The front seat occupant's belt slipped through the buckle when the car struck the guard posts.

No injuries to driver.

Injuries to right front passenger: 1 inch laceration to nose, sustained outside of vehicle.

Belt attached to floor.

Type of failure: Belt slipped through buckle (Driver stated passenger had not secured buckle properly, and that there was no defect in the belt).

Freeway Operations Seminar Announced for California

The second of a series of seminars to discuss traffic operations on freeways and expressways will be held in Sacramento, Calif., June 16 to 18.

Planned on the same pattern as the seminar held in April in Columbus, Ohio, the California meeting will be guided by many of the same speakers and discussion leaders. Included are O. K. Normann and D. W. Loutzenheiser of the U. S. Bureau of Public Roads; A. F. Malo, director of Detroit's Department of Streets and Traffic; E. R. Ricker, traffic engineer of the New Jersey Turnpike; B. W. Marsh, director of traffic engineering and safety for the AAA; George M. Webb, traffic engineer of the California Division of Highways, and Joseph E. Havenner, president of the Institute of Traffic Engineers.

Invitations will be extended to traffic engineers, planning and design engineers, enforcement supervisors, and other city, county and state officials who have or expect to have responsibility for planning or operating a freeway or expressway. Discussion will include problems arising at the planning and design stages as well as later, but will be centered throughout on the operational aspects of these new roads.

Robert A. Pike Dies

Robert A. Pike, field representative for the Colorado Highway Safety Council, died of a heart attack March 29 at his home in Denver.

Born in Boulder, Colo., in 1906, Mr. Pike spent many years working in community organizations, primarily in the traffic safety field. Before joining the council in 1957, he worked for the Los Angeles Heart Association.

From 1947 to 1952, Mr. Pike held the position of Western Regional field representative for the National Safety Council, responsible for 11 western states. He served as consultant to the Governor's Highway Safety Conferences in these states. In 1950 he was consultant to the President's Highway Safety Conference. At the time of his death, he was organizing a local safety council in Pueblo, Colo.

STRESS AND SEAT BELTS

Holloman Base tests show how human body—restrained by seat belt alone—stands up under terrific stress.

THE human body can withstand stress in excess of 23 times its own weight without discomfort when restrained by a seat belt alone. This was proved in a test conducted at the Third Annual Automotive Crash and Field Demonstration Conference held at Holloman Air Force Base, N. M.

In this test, Capt. Eli L. Beeding, Jr., demonstrated the Aero Medical Field Laboratory's "Bopper"—a test device that has been in use by the laboratory for some time for measuring the amount of force that can be tolerated by the human body when restrained by a seat belt alone.

The Bopper consists of a chair mounted on a track about 20 feet long. The chair is equipped with connections for restraining devices such as lap belts or shoulder harnesses. The chair can be shot forward by bungecords (elastic) and brought to a stop by a brake arrangement at the other end of the track. The brake can be set to provide uniform deceleration over any stopping distance desired up to approximately one foot.

After a check by attending physicians at the field, Capt. Beeding was strapped into the Bopper with a seat belt. No other restraining device was used. Capt. Beeding was subjected to a force in excess of 23 times his own weight (23 G) and came out of the experiment without injury or discomfort.

This is one of many tests now in use by the Aero Medical Field Laboratory to test both the amount of force that can be tolerated by the human body when restrained by a seat belt only and also the effects of the seat belt itself on the body. Evidence accumulated so far tends to show that the human body can withstand great amounts of force of short duration, and that the strength of seat belts can be increased without injurious effect to the wearer.

Up to now the Air Force has been using three-inch-wide seat belts but plans to conduct future tests using the two-inch automobile belts. The difference in size is expected to have little effect on test results.

The Air Force has a vested interest in automobile crash research, an activity in which it has been engaged for several years. Its annual toll from private automobile crashes includes: 600 deaths, 5,500 hospitalized injuries, a 125,000 man-day loss and a $24,500,000 cost bill.

The Aero Medical Field Laboratory is uniquely qualified to conduct automobile crash research because many of the principles involved parallel those involved in the Air Force's airplane crash research. Both deal with the question of human restraint and human tolerance to the forces developed by such restraint.

The Aero Medical Field Laboratory, under the direction of Col. John P. Stapp, has developed several test procedures and has accumulated elaborate testing devices which lend themselves to automobile crash research. Also, the laboratory is fortunate in having a number of top-flight personnel eager to volunteer as guinea pigs in such experiments. It is the only research organization actually using human subjects in automobile crash experiments.

The purpose of the recent Automotive Crash and Field Demonstration Conference was to demonstrate some of the test procedures employed by the laboratory and to provide an opportunity for discussion of seat belt questions by representatives of the Society of Automotive Engineers' Seat Belt Committee, the Special Subcommittee on Traffic Safety of the House of Representatives and others interested in traffic safety. The conference was attended by 114 persons, including representatives of the automobile industry, the Armed Forces, safety organizations, insurance organizations and medical organizations.

CAPTAIN Beeding is subjected to a force in excess of 23 times his own weight to demonstrate Air Force "Bopper."

Four Times Safer

CONTROLLED ACCESS CUTS DEATHS

A recent study indicates four-lane divided highways with complete control of access are almost four times as safe as other trunkline highways. Four-lane divided roads without control of access are the most accident prone and dangerous roads in the state.

The study made by the Michigan State Highway Department indicated an accident rate averaging 151 accidents per 100,000,000 vehicle miles traveled on rural state trunkline expressways as compared to 305 on four-lane divided highways without access control during 1957. The five-year average accident rate on all rural trunklines is 223.

The fatality rate for the same periods was 2.5 per 100,000,000 vehicle miles for controlled access expressways compared with 5 for four-lane divided routes without control of access. The statewide state trunkline five-year fatality average is 8.2.

State Highway Commissioner John C. Mackie said the department will no longer continue to "plan and design new four-lane divided highways on the state trunkline system without controlled access." He ordered the department's planning division to review existing plans for four-lane routes without access control to consider changing the design to controlled access standards. The design was completed and some rights-of-way acquired for such routes.

Mackie said his analysis indicates that four-lane divided highways without controlled access give the motorist a "false sense of security."

"They encourage travel at high speeds because they separate traffic and provide additional room for maneuverability, yet they still subject the motorist to friction from vehicles or pedestrians moving in and out of roadside services, business establishments and residences," he said. "They require stop lights at major intersections which vastly increase rear-end collision potential. They require left-turning movements in the face of on-coming high speed traffic. In short, although they are capable of carrying a greater volume of traffic than a two-lane highway, they still expose the motorist to the same hazards, at a higher average rate of speed, as the obsolete two-lane roadways they were designed to improve upon or replace."

The Commissioner said almost all of the 900 miles of new four-lane highways planned in the department's five-year, one-and-a-quarter billion dollar highway construction program are designed to controlled access standards.

"If the safety record of the controlled access highway mileage we presently have in operation holds true on routes planned in the program, I predict this new modern highway system will save more than 50 lives the first year and at least 2,000 accidents, not taking into account the increase in traffic volumes which most surely will occur," he said.

Mackie cited a study in Monroe county which indicates a 26-mile Rockwood-Toledo expressway saved "nearly a life per mile in traffic fatalities" during 1957.

News from Capitol Hill

Highway Billboards

Congress passed and President Dwight D. Eisenhower approved a bill to accelerate the Federal-Aid Highway Program. The proposal, H. R. 9821, provides for a one half of one per cent bonus in Federal interstate highway funds to those states which regulate billboards along the interstate highway system. Four types of signs are permitted.

Interstate Safety Compacts

The Roberts Subcommittee on Traffic Safety in the House of Representatives debated a resolution promoting highway traffic safety. The bill—H.J. Res. 221—grants Congressional consent to states to negotiate and enter into compacts to promote and carry out accident prevention on their highways. The bill was endorsed by the American Association of Motor Vehicle Administrators, the American Association of Casualty and Surety Companies and the National Safety Council.

Excessive Auto Exhaust Fumes

Hearings wound up on a proposal to prohibit the use of motor vehicles which discharge certain amounts of unburned hydrocarbon. Testifying for the bill, H. R. 9368, witnesses pointed out the relationship between automobile exhaust and cancer. Dr. John H. Heller, director of the National Cancer Institute of the United States Public Health Service said that there is "grave suspicion that excessive concentrations of automobile exhaust . . . will produce cancers in the human." The bill provides that the Public Health Service will determine what is an unsafe amount for human health.

Supreme Court Rules on Trucking Fines

The United States Supreme Court ruled that fines paid by interstate motor carriers for overweight violations are not deductible from income taxes. The Court said violations of state maximum-weight laws are not "ordinary and necessary" business expenses. To allow such deductions, the court said, "would frustrate sharply defined state policy . . . to protect their highways from damage and to insure the safety of all persons using them." The Court suggested this would encourage violations. The ruling specified that it made no difference whether the violation was wilful or inadvertent, since state laws make no such distinction.

Test Talk

How drink numbs brain

The effects of alcohol on the brain may be compared to dropping water on top of a sponge. It soaks in from the top, outside surface toward the center and the bottom, passing through the various control centers. Alcohol's first effect, then, is to numb the inhibiting or restraining power of the upper brain centers — centers which tell us not to do those things which we have learned from years of moral and legal standards that we should not do. Even small amounts of alcohol may cause a driver to disregard red lights, stop signs, and the rights of other drivers on the streets and highways.

Chemical test law in D. C.

President Eisenhower signed a bill in March enacting into law the major provisions of the model chemical test law for the District of Columbia. The new District of Columbia law covers three types of tests: blood, breath and urine. Assistant Corporation Counsel Robert F. Kneipp said that until this law was passed the District had to have an expert witness explain to juries what test findings meant. There are now 28 states and the District of Columbia that have adopted the major provisions of the Uniform Vehicle Code as it relates to chemical tests for intoxication.

AMA asks better use of Vehicle Code

Because of the fallacious, overly liberal interpretation of the chemical tests section of the Uniform Code by some jurists, certain persons feel that the fault lies with the Uniform Code itself. These same individuals also feel that the offense of driving while intoxicated should be sufficiently proved by the sole finding of 0.05 per cent or more of alcohol in the blood. While such a ruling would simplify matters, its adoption or enforcement would be inequitable and impossible. Despite the need for increased emphasis on traffic safety programs and the increasing death toll caused by the drinking driver, these facts cannot be used in justification of arbitrary and unscientific legislation. It is most important that the applicable provisions of the present Uniform Code be properly enforced and that law enforcement officers give more consideration to the middle presumptive zone, between 0.05 per cent and 0.15 per cent which is probably responsible for most of the automobile accidents caused by over-imbibing.

(Journal, A.M.A., March 22, 1958)

Behavior plus tests tells story

It is unfortunate that too many police officials act as though they are unaware of the three presumptive zones of the degree of intoxication. Some judges rule as though a person is drunk at 0.15 per cent and sober at 0.14 per cent. They disregard the fact that the defendant was arrested because of his abnormal behavior and the chemical test was given to determine whether it was due to or aggravated by alcohol. The judge should consider all the circumstances leading to the arrest. When the accused is found to have the physical symptoms of intoxication and a blood alcohol level of 0.05 per cent, he should not be exonerated on the basis of the chemical test. (Journal, A.M.A., March 22, 1958)

Brass Button News

Teamwork in Kansas

The teamwork between police safety officials and organizations in Kansas resulted in 103 fewer traffic fatalities in 1957 compared with 1956. There were also 431 fewer injuries on the state highway system and pedestrian fatalities were reduced 50 per cent. Claud R. McCamment, director of safety, gave credit to a special program carried on by the Kansas Highway Patrol with the cooperation of organizations and individuals. The program was aimed at two groups of drivers that merited special attention—military personnel and teen-agers. The patrol made special reports to military bases in Kansas on personnel involved in accidents. Each base cooperated in statewide safety campaigns. Three statewide teen-age meetings were held and 300 high schools have local teen-age safety organizations.

Enforcement needs outlined

The Committee on Enforcement and Traffic Safety of the American Association of Motor Vehicle Administrators recently made the following recommendations. (1) Better criteria are needed for the proper determination of police personnel needs. (2) Appropriate recognition should be given to special problems arising on week-ends and during holiday periods, but without undue emphasis on enforcement in such periods at the expense of day-to-day enforcement throughout the year. (3) Police should not be expected to assume judicial functions in connection with the arrest of juvenile traffic offenders.

Teen curfew in Minnesota

A new law in the state of Minnesota prohibits persons under 17 years of age from driving cars between midnight and 5:00 a.m. Governor Orville L. Freeman said he was convinced a majority of young people "conduct themselves in accordance with the dictates of common sense," but added that crimes and accidents happening during the midnight hours call for a trial of the law to protect both young and old from the "irresponsibility of a minority."

New speed report out

A new 37-page report of the Committee on Speed of the Traffic and Transportation Conference of the National Safety Council is now available, (single copies free). The booklet, entitled "Speed Regulation," has been prepared by the Committee on Speed to give public officials and other interested citizens a summary of the best available information on speed and how it influences traffic operation and traffic management.

Electronics speeds justice

Electronic machinery in Cincinnati will speed traffic violators to jail if they have not paid their fines. Tagged motorists will be arrested within a week after their unpaid fines are due now that the traffic bureau operations have been streamlined. Formerly, it took more than six months to catch up with scofflaws.

Inter-City Bus Contest Sponsored by NAMBO

The National Association of Motor Bus Operators will become the sixth trade association to provide for its members the privilege of participating in the Council's National Fleet Safety Contest.

NAMBO Secretary-Manager A. W. Koehler is announcing to his members that beginning July 1, the starting date for the 1958-1959 contest, NAMBO will sponsor the Inter-City Bus Division of the contest. In the future, award plaques and certificates for winners in the Inter-City Bus division will bear the name of the National Association of Motor Bus Operators and the National Safety Council.

Details of NAMBO sponsorship of the contest division were worked out between Mr. Koehler and J. P. Hightower of the Greyhound Corporation, chairman of NAMBO's Committee on Safety, and the members of NSC staff.

Other associations sponsoring divisions of the contest are the American Gas Association, the International Association of Chiefs of Police, the Milk Industry Foundation, the National Automobile Transporters Association and the United States Brewers Foundation.

The National Safety Council conducts the largest fleet safety contest in the world. It includes more than 2,000 fleets divided into 47 competing groups and representing an annual exposure of more than five billion vehicle miles.

Motorist's Prayer

Each time I take the wheel
Oh Lord, I pray,
Grant that no harm shall come
Of me, today.
See over hills for me,
On curves, stand by,
Post some bright Angel near
To see that I
Observe the playing child.
The old, less spry;
No act of mine must cause,
Someone to DIE.

(Anonymous)

COUNCIL RECEIVES ASF GRANT TO FINANCE ANNUAL INVENTORY

ASF TRUSTEE L. S. Wescoat (right) presents grant to Gen. George C. Stewart, NSC, to finance traffic safety projects in 1958.

The National Safety Council has announced receipt of a $153,600 grant from the Automotive Safety Foundation to finance the Annual Inventory of Traffic Safety Activities and other projects during 1958.

A check for a quarterly installment of the grant was presented April 21 by Foundation Trustee L. S. Wescoat, chairman of the executive committee, Pure Oil Co., to Gen. George C. Stewart, executive vice president of the Council.

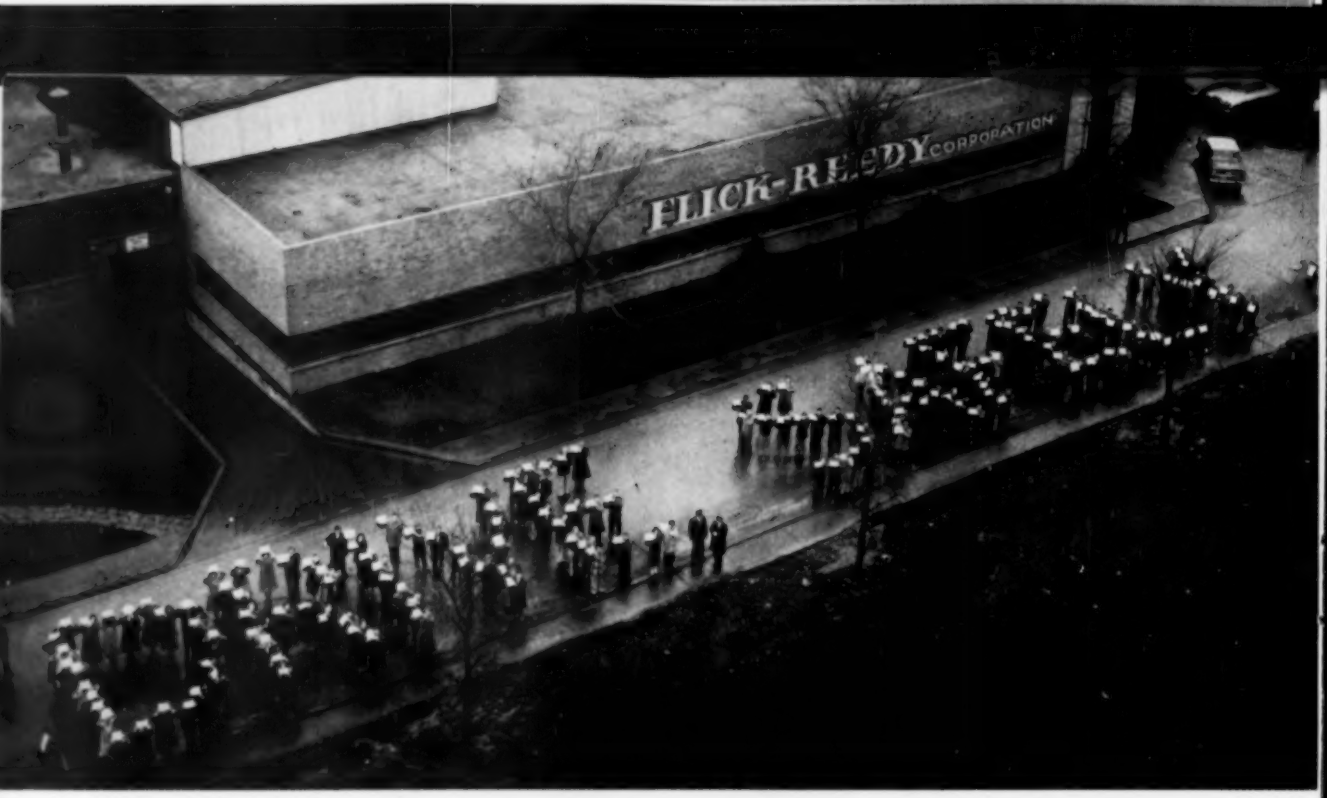
Safety Work Inventory

The Annual Inventory of Traffic Safety Activities measures the traffic management and accident prevention work of the 48 states and more than 1,200 cities against national standards and determines where improvements are needed.

Related to the Annual Inventory and supported by the Foundation grant is a statistical analysis of certain items of the Inventory reports to determine common factors and the influences they may have.

In addition, the Foundation grant helps finance the Council's research correlation service, which collects and maintains information on highway traffic research. Its aim is to obtain wider application of research findings and to seek sponsors for needed research. As part of the service, selected research reports are published in TRAFFIC SAFETY.

The American Bar Association also announced receipt of a $12,500 grant from the ASF to finance traffic court improvement activities during 1958.



TRAFFIC SCHOOL GOES CALLING

Suburban industrial firm and city traffic court cooperate to bring improvement course to employees at the plant.

A PILOT program held early this spring in a Chicago suburb may well set the pattern for widespread cooperation of industry and courts in the promotion of adult driver education.

The Flick-Reedy Corporation, manufacturer of hydraulic equipment, and the Traffic Education and Safety Division of the Chicago Municipal Court were the principals in the experiment —a driver improvement course given at the Flick-Reedy plant in Melrose Park, Ill.

Invited by Chief Justice Raymond F. Drymalski of the Municipal Court to be the first company to participate in driver-pedestrian clinics sponsored by the Driver Improvement School of the court, Flick-Reedy enthusiastically accepted.

Due to effective promotion and the interest of both management and employees in traffic safety, Flick-Reedy personnel enrolled 100 per cent. At the conclusion of the course, Judge Drymalski presented the students with certificates which designated them as "Ambassadors of Safe Driving."

Thomas Wood, director of communications for the company, worked with Dr. Arthur Conrad, director of the Driver Improvement School, in setting up the program. Instructors were Sgt. James Casey, head instructor at the school, and Officer Walter Hayes.

The course, identical with that given at the school headquarters, consisted of four weekly sessions of one and a half hours each. The entire enrollment was divided into three groups, each group meeting on a different day.

Classes were held in the company cafeteria from 4:00 p.m. to 5:30 p.m. This meant an investment of four hours company time per employee for the entire course, at an overall dollar cost of $7,000 to the company—a firm with gross annual sales of around $5,590,000.

The first class dealt with accident causing factors such as improper attitudes toward laws, bad driving habits, physical limitations and inattention. In the second class the anatomy of an accident was studied—what happened, what caused it, how it could have been avoided. Later sessions were devoted to correct driving techniques and a study of traffic laws. Two traffic safety films were shown at each session.

The classes were informal and questions from students were invited. To put students at ease and to emphasize the fact that police officers should be regarded as friends, instructors wore civilian dress at the first three sessions. They donned uniform for their final appearance.

Advance publicity for the program got underway with a letter from

President Frank Flick urging all employees to enroll in the course. Large pictures of Chicago accidents decorated plant walls, clippings of safety articles appeared on every door, traffic safety material was displayed on bulletin boards, and an article was published in the employee magazine.

Large representations of the Signs of Life were installed in the cafeteria and remained there throughout the course. A brake reaction test machine was also on hand throughout the course so employees could test their reactions.

Safety consciousness is not new at Flick-Reedy. The company has won two major safety awards in two years. In 1956 it received a first place award from the National Safety Council for its record of nearly 1,000,000 man hours worked with no lost-time accidents. In 1957 it was awarded a safety "Oscar" by the Employers' Group Insurance Companies for another no lost-time record.

"We are proud of these achievements," said Flick, "but today safety on the road precedes safety in the plant. Last year traffic accidents resulted in 318 deaths and 33,803 injuries in Chicago alone. These mishaps can lower production and harm the well-being of employees just as surely as in-plant accidents. To promote better driver and pedestrian habits among all our employees is a sound investment."

The Flick-Reedy plant is located 16 miles from downtown Chicago and most of its employees drive to work. Although traffic accidents have not been a problem up to now, Mr. Flick is acutely aware of their potential danger. He is also very much aware that continuous education is vital to the development of the individual and enhances his value as an employee.

In line with this thinking, employees have been offered free courses in economics, public speaking and business letter writing—partly on company time. The company also sponsors the Miller College of Cylinder Knowledge, a course in hydraulic cylinders, which has been taken by Flick-Reedy people and 300,000 other design, production and maintenance engineers. At the present time four roving "colleges" —modern air-conditioned buses—are

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PRESIDENT Frank Flick heads line of company employees receiving certificates from Judge Drymalski at end of course.

OFFICER James Casey uses actual accident photo to explain to students how improper left-hand turn can precipitate accident.

STUDENTS test their driver know-how. They are using standard test given at regular sessions of driver improvement school.

Top Safety Pictures

1957 FILM WINNERS ANNOUNCED

Eight motion pictures—one theatrical, the remainder non-theatrical—have been chosen for bronze plaque awards by the National Committee on Films for Safety as the outstanding accident prevention films produced in 1957.

Eighteen additional motion pictures and two sound slidefilms were voted certificate awards of merit.

The theatrical motion picture—*The Invisible Passenger,* produced and sponsored by Jack L. Copeland and Associates, Los Angeles, Calif.—also was chosen for the David S. Beyer Award, given annually for the outstanding theatrical motion picture on highway safety. Donor of the award is Liberty Mutual Insurance Co.

The safety films committee, which represents 23 national organizations, makes annual awards for films in the fields of traffic, occupational, home and general safety.

Here is the list of 1957 award winners:

Theatrical

Motion Picture (Plaque and David S. Beyer Award)

The Invisible Passenger, produced by Jack L. Copeland and Associates for self.

Occupational

Motion Picture (Plaque)

Danger: Roofers at Work, produced by University Broadcasting Services, Florida State University, for Florida Industrial Commission.

Falls Are No Fun, produced by Cal Dunn Studios for National Safety Council.

Motion Picture (Certificate)

Chain Saw Safety Pays Off, produced by Victor Kayfetz Productions for Homelite, Division of Textron.

Lock and Tag, produced by E. I. du Pont de Nemours & Co. and the Calvin Co. for Safety & Fire Protection Div., E. I. du Pont de Nemours & Co., and Savannah River Plant, Atomic Energy Commission.

One Is Too Many, produced by Rarig Motion Picture Co. for Pacific Coast Association of Pulp & Paper Manufacturers.

Safe Poles, produced by Texas Industrial Film Co. for American Telephone & Telegraph Co.

Safe Work on Poles, produced by Texas Industrial Film Co. for American Telephone & Telegraph Co.

Safety on the Job at Sea, produced by F. K. Rockett Co. for Military Sea Transportation Service.

Sound Slidefilm (Certificate)

Judgment, produced by Phillips Petroleum Co. for self.

Seven Doorways to Death, produced by Animatic Productions for American Gas Assn.

Traffic and Transportation

Motion Picture (Plaque)

Be Your Own Traffic Policeman, produced by Portafilms for self.

Flagged for Action, produced by National Board of Canada for self.

The Invisible Killer, produced by Film Associates of Michigan for Automotive Exhaust Research Institute.

Motion Picture (Certificate)

Bicycle Safety Skills, produced by Coronet Instructional Films for self.

The Defensive Driving Series, produced by Cal Dunn Studios for National Safety Council.

How to Drive on Snow and Ice, produced by Seiberling Rubber Co. for self.

The Human Factor in Driving, produced by Progressive Pictures for self.

The Little White Line that Cried, produced by AAA Foundation for Traffic Safety for American Automobile Assn.

One Second to Safety, produced by the Virginia Department of Education for Governor's Highway Safety Committee.

What Made Sammy Speed, produced by Sid Davis Productions for self.

General

Motion Picture (Plaque)

Electric Power and Common Sense, produced by Bay State Film Productions for the Connecticut Light & Power Co., Hartford Electric Light Co., Housatonic Public Service Co., United Illuminating Co., Western Massachusetts Electric Co.

I'm No Fool in Water, produced by Walt Disney Productions for self.

Motion Picture (Certificate)

First Aid, produced by Washington Video Productions for Crown Zellerbach Foundation.

I'm No Fool Having Fun, produced by Walt Disney Productions for self.

Take Safety with You, produced by Corps of Engineers, U. S. Army, for self.

To Save a Life, produced by Film Originals for Aircraft Owners & Pilots Association Foundation.

Watershed Wildfire, produced by U. S. Department of Agriculture for self.

Traffic School Goes Calling

From Page 19

dispensing knowledge of circuitry and cylinders throughout the country.

Both Mr. Flick and Judge Drymalski are well pleased with the turnout at the company's latest educational venture, the driver-pedestrian clinic.

Said Judge Drymalski, "We are encouraged by the 100 per cent participation of Flick-Reedy people. We anticipate as a result that other business firms will follow this pilot program as part of the nationwide effort to put the brakes on traffic accidents."

Establishment of driver-pedestrian clinics in industrial plants by Chicago's Driver Improvement School is expected to stimulate similar action by other groups.

Since its inception in October, 1956, the school has been a leader. It is now internationally known and has received inquiries from countries as far distant as South Africa, New Zealand and Jamaica. The school faculty has hosted visiting dignitaries from many countries, including the Philippines and Iraq. Representatives from the attorney general's office in Canada have come to study the school's methods and curriculum.

Before setting up the course of study Dr. Conrad, the director, carefully examined the methods, equipment, and curricula of many other driver improvement schools. He also consulted government agencies, traffic safety organizations, associations, and private corporations.

To date more than 7,000 students have been graduated from the school. About two-thirds of these have been volunteers, the rest violators.

COOPERATION IS DRIVING MUST

A DRIVER doesn't have to be a mind reader to stay safe in traffic, but it helps! In the varied pattern of modern traffic, in which one false move can result in a serious accident, the driver who has learned to anticipate the actions of other drivers stands a better chance of staying safe.

Versatility Needed

Traffic is a group movement, and one of the most important factors in coping with it is the ability to keep in step with the traffic flow—to share the road cooperatively with other drivers.

This is no cinch. The traffic pattern is variable, and sometimes changes abruptly. Today's driving requires versatility.

In a routine drive to the grocery store the driver may be exposed to a variety of traffic situations. A traffic jam . . . a careless pedestrian . . . an unsafe action of another driver . . . these are a few of the things that may suddenly touch off a dangerous situation.

On a trip of any considerable length he will probably encounter a variety of traffic patterns. Each shift in environment will require a shift in driving techniques.

In cities he will be confronted with congestion and the dangers arising from cross traffic and the prevalence of pedestrians.

On rural roads he will meet fewer of everything—pedestrians, intersections and other cars. But there will be more drivers traveling at high speeds and driving in the middle of the road.

But the biggest test of versatility comes in making a transition from average driving to superhighway driving and back again. There is a radical difference between the two.

New Dangers

In the latter, the danger of pedestrian accidents, head-on collisions, and the conflict of cross traffic is virtually eliminated, but the danger of side swipes and rear-end collisions is intensified. The higher speeds at which traffic travels on superhighways lessen the time the driver has to think and react in an emergency and increase the severity of any crash that may occur. Shifting back to average driving requires mental gear-shifting again.

These are the conditions the driver faces in today's traffic. Under these conditions he has a greater responsibility to share the road and to keep in step with the traffic flow.

And it's your responsibility to put this idea across in your community during the Share the Road program.

SHARE THE ROAD

Operation Safety Theme for August

Keep Traffic Moving Smoothly and Safely . . . 22

Failure to Share Road Increases Accident Potential 24

August Program Aids 26

Free Materials 26

Posters, Leaflets, Booklets 27

PLANNING THE PROGRAM

OBJECTIVE—KEEP TRAFFIC MOVING SMOOTHLY AND SAFELY

SHARING the road means much more than giving the other fellow his allotted amount of road space.

When people share in any enterprise they cooperate to make the project a success. This is exactly what sharing the road entails—each driver working with all other drivers to keep traffic moving smoothly and safely.

Sharing the road means keeping in step with traffic—driving no faster and no slower than the general traffic flow. It means courtesy, cooperation and communication among drivers—courtesy, the driver's respect for the rights of others; cooperation, the driver's willingness to take only his own share of the road and give other drivers theirs; communication, the driver's practice of signaling his intentions to other drivers.

The major portion of your program will be concerned with urging the drivers of your community to pattern their driving on these considerations. This will fit in well with the over-all summer Slow Down and Live program because the "hurry complex" which this program combats is the underlying cause of much out-of-step driving.

Discuss with your officials the possibility of conducting an emphasis program on "out-of-step" violations during August. Statistics on such violations are given on page 24. Through their accident records, local officials will know which of these violations are accident factors in your community and they can train their control and enforcement guns on them. If new legislation regarding these violations has been passed or is needed, this would be a good time to spotlight the changes.

Your job in this enforcement action will, of course, be to give it the kind of publicity that will build public support for it. This means advance publicity as well as coverage while the campaign is underway.

If no emphasis program is undertaken, officials can still give you valuable information on the most frequent Share the Road type violations in your community. With this information, you will know how to relate your program to local needs.

Slant a good part of your material to vacationers, because sharing the road is a very important part of a vacation motor trip. Remind drivers that obedience to traffic laws and Signs of Life is essential to safe, courteous, cooperative driving.

Distribute leaflets stressing the need for safe speed and highway courtesy, the dangers of mixing alcohol and gasoline, the importance of obeying traffic laws and Signs of Life. Make use of your usual distribution channels —plus outlets that will catch the vacationer enroute, such as: hotels, motels, service stations and roadside restaurants. Posters on the same subjects should be prominently displayed throughout the community.

Interest your local merchants and civic groups in setting up "coffee bars" along your highways, inviting passing motorists to take a coffee break. This idea has been tried out in several cities and found to be a very effective way of pointing out the dangers of over-fatigue on long trips and of recommending coffee instead of liquor as that "one for the road."

One of your newspapers might do a feature on the importance of versatility in modern driving. This article could show that the driver may have to switch quickly from one type of driving to another—congested city streets, quiet intra-city highways, narrow country roads, and superhighways. It should give tips on how to cope with the different situations each type of driving presents.

Work up a picture story on Share the Road violations. Feature such things as: hogging the road; bumper chasing; lane hopping; failure to signal intentions; driving at breakneck speed or moping along; making sudden stops.

Do an article on superhighway driving. If there is a superhighway in your area, consult police files and talk to traffic officers to find out what hazards it presents and what the accident experience is. Also use facts given on page 24. If you have no superhighway in the vicinity, your people should be told what to expect when they encounter these roads on vacation trips.

You could cover the same subject on radio or TV. It could be handled as an interview with a state trooper, motor club representative, travel agent, judge or other suitable individual.

Also make use of radio and TV spot announcements. These should stress local Share the Road problems.

A chalk talk by a local driving instructor or professional driver to

demonstrate the far reaching effects of out-of-step driving would make good TV fare.

While the major part of your program will be concerned with telling the driver how to share the road cooperatively with other drivers, some consideration should be given to the roads on which this sharing is to be done. It is the duty of all individuals and groups in the community to see that their roads are as modern and safe as possible.

The new Federal Aid Highway Program now underway will provide modern roadways to carry a substantial part of the ever-increasing traffic load.

Hearings are held at which the citizens of a community can speak their minds concerning Federal Aid roads that affect the community. It is up to citizens to attend these public hearings to see that safety is built into the roads.

One of the main issues to crop up at such meetings is the subject of controlled access. Because of business interests, property considerations and other personal reasons, there will frequently be a certain amount of resistance to controlled access highways. This resistance is likely to be organized and vocal.

However, statistics prove that controlled access roads are the safest in the country. Unless the people insist on planned access on the new interstate system and other heavy-traffic thruways, these highways may soon be as dangerous as the old roads because of choking roadside development and conflicting traffic movement.

If your community is slated for any new highway development, it is of major importance that you mobilize public support and public action to see that you get highways that will give you safe and efficient transportation.

Contact all influential individuals and groups in the community. Win them over to your side. Get their cooperation in publicizing the need for controlled access and in organizing the public for action.

Use your newspapers to tell the public about the benefits of controlled access.

Over radio and TV, have speeches, panel discussions and interviews. Get engineers to tell how safety is built into these roads . . . enforcement people to tell about their better accident experience.

PUBLIC SUPPORT GETS NEW LOOK

Next month will bring some changes in the Public Support Section of TRAFFIC SAFETY.

For a year now we have continued the monthly seasonal themes of Operation Safety. We have kept an attentive ear cocked for the comments of readers, and now we believe we know what is needed to make this public support and program planning material even more effective.

In the first place, the Operation Safety seasonal themes have changed but little in several years. More variety is called for, including public support material tied to the objectives of the Action Program. Naturally, certain seasonal material can't be ignored, but we believe we can serve the needs of our readers better if we provide more flexibility and broader scope.

In the July issue we will present material on street lighting and night hazards for use in October—three months lead time in which to order materials and plan local activities. The November subject, presented in the August issue, will be legislation, one of the Action Program objectives. The November timing will permit support build-up before the opening of many state legislative sessions in January. Holiday hazards is scheduled for December.

The section will include facts and other material which will be available as reprints for distribution by support groups, or which may be reproduced locally directly from the magazine page. The supplementary service of pattern news and radio material will be discontinued.

The reprints from the magazine will permit more complete and definitive material than was possible in the small leaflets formerly published in the Operation Safety series.

If you wish to continue some of the previous Operation Safety themes, the material will still be available. We are making up inexpensive kits containing a planning guide, fact sheet, sample posters, newspaper mats, and pattern news and radio material on the themes of the last 12 months. These will be available on order. A list of subjects will appear in the July magazine.

However, the recent regional conferences of the President's Committee gave strong emphasis to the need for citizen support of the Action Program objectives—the basic goals for improved traffic safety performance throughout the country.

Many readers have indicated that public support materials which would help them achieve these Action Program goals, interspersed with other subjects vital to traffic management and attitude building in their communities, would serve the cause of safety best.

Starting in the July issue we will do our best to provide this help.

The Editors

FAILURE TO SHARE THE ROAD INCREASES ACCIDENT POTENTIAL

As more and better roads are built and other traffic engineering improvements made, more of the responsibility for safe movement in traffic is placed upon the individual driver. Drivers must learn to "share the road"—to keep their vehicles positioned properly in relation to the rest of traffic.

This means a minimum of lane changing and other unexpected movements. It means a constant awareness of safe speeds and traffic laws. It means an alertness to the dangers of poor road and weather conditions and an unerring ability to adjust to changes in roads, weather, visibility and traffic flow.

Inability or unwillingness to share the road and to keep in step with the normal flow of traffic places the driver and his vehicle in constant conflict with the movement of other vehicles and increases his chances of landing in a potential accident situation.

As two vehicles come closer together—whether traveling in the same or in opposite directions—danger of an accident increases. When a passing or turning movement is made, the accident potential of the situation increases.

The following list shows the relationship of "share the road" type violations to highway deaths.

Violations per 100 Drivers In Fatal Motor-Vehicle Traffic Accidents In 1956

Did not have right of way	8
Following too closely	1
Improper passing	2
Failure to keep right of center line	10
Improper turning	1
Improper parking, starting	1

Speed

Improper speed also causes real trouble. The too-fast driver must constantly engage in passing movements—that means increased exposure to potential accident situations.

> Speed shortens reaction time and makes handling of the vehicle more difficult.
> It increases the possibility of losing control in some road or weather conditions.
> It increases the severity of the accident when a collision occurs.

Speed Violations per 100 Drivers in Fatal Motor-Vehicle Traffic Accidents in 1956

Exceeding speed limit	22
Exceeding safe speed—not stated limit	10

The too-slow driver creates many accident situations. He forces others to pass, resulting in unnecessary conflicts in movements and many times in impatient and ill-advised actions on the part of other drivers.

Superhighways

Superhighways are built to combine speed and safety. They move traffic more efficiently, saving time and expense. There are no intersections, cross traffic, traffic signals or pedestrians to worry about.

These roads have controlled access—no traffic enters or leaves except at interchanges. Roadways are wide, curves gradual. There are no steep hills. Shoulders are ample and median strips wide. Driving conditions are generally excellent.

However, these super roads breed their own hazards. While the all-accident rate is considerably lower on superhighways than on other roads, the incidence of rear-end crashes, sideswipes and one-car accidents (running off the road or striking a fixed object) is greater.

Pennsylvania Turnpike

In a study of accident experience over a period of 18 months on the Pennsylvania Turnpike (Pennsylvania Turnpike Joint Safety Research Group, "Accident Causation") it was found that the vast majority of the accidents involved driver errors.

A small percentage involved vehicle failure and blowouts accounted for one-third of these. Even in these cases, the driver may be considered negligent for not having his vehicle checked.

Most of the accidents occurred under "best possible" environmental conditions, but drivers were found to have underestimated the driving task.

The human errors involved in accidents were not flagrant in most cases, but small errors are magnified on the superhighway and lead to big crashes.

The following table shows the percentage of different types of driver errors.

Human and Vehicular Factors Relating to Pennsylvania Turnpike Accidents

Failure to cope with road conditions	22 %
Illegal and unsafe actions (violations of safe driving procedures)	21.5%
Inattentiveness or falling asleep (attending to other tasks)	17.2%
Deficiencies in routine driving skills (manipulation of the car)	11.7%
Misperception (misjudging distance, overdriving lights, etc.)	8.2%

HOW TO SHARE THE ROAD

- Stay alert. Develop defensive driving techniques. Study the road ahead for accident situations. The higher the speed, the farther ahead your attention must be fixed.

- Think ahead. Plan emergency measures. Know your own and your car's capabilities. If the car ahead should suddenly block your lane, could you stop? Could you swerve clear safely to avoid an accident?

- Be adaptable. Get the "feel" of changing traffic, road and weather conditions. Adjust your speed immediately.

- Pace yourself by the traffic around you. This includes adjusting to traffic behind through constant use of your rear-view mirrors. Don't race. Don't lag. Don't ride the bumper of the car ahead.

- Take only your share of the road—in the proper place. Keep in the proper lane. Pass only when you see you have ample time and space to avoid cutting out and in too sharply. Signal all turns and lane changes.

- Obey to the letter all traffic laws, signs, signals and the dictates of common sense and courtesy. If you make a mistake, don't lose your head. Don't jeopardize yourself and others by hasty, foolishly sudden moves.

- The higher speeds permissible on superhighways make the foregoing rules doubly important. There are also additional rules you must follow to stay safe.

  Avoid sudden lane changes. Always signal before changing lanes. When leaving the superhighway, move into the deceleration lane well in advance. Never make a U-turn. Never park, stop, back up or walk on the roadway. Except for emergencies, stop only at established rest areas. Check your rear-view mirror frequently. Avoid fatigue and drowsiness by stopping to rest occasionally. Remember, superhighways are built for high-speed driving. When you want to drive at a leisurely pace, stay off them.

AUGUST PROGRAM AIDS

Films, booklets and other aids for your Share the Road Driving program

THE films listed below were selected for use in your August Share the Road Driving program. With each film listed, the source is given. They are *not* available from the National Safety Council. A notation at the end of each listing shows whether the film is available through purchase, rental or loan. For local film sources write to your state and local safety councils, state safety departments, state library or state college or university.

MULTIPLE LANE TRAFFIC (16mm sound motion) b&w 16 min. Film defines and explains types of modern highways and how to use them safely. Scenes show how to enter and leave modern highways; necessity of keeping in step with the traffic flow; explains need for proper clearance between cars; points out importance of courtesy where there are no right-of-way laws. Progressive Pictures, 6351 Thornhill Dr., Oakland 11, Calif. Purchase and rental.

CAUTION, DANGER AHEAD (16mm sound motion) b&w 16 min. The crowded conditions of American highways today. Some of the reasons such highways are unsafe. RKO Pictures, Inc., 1270 Avenue of the Americas, New York 20, N. Y. Long term lease.

GIVE YOURSELF THE GREEN LIGHT (16mm sound motion) col. 26 min. What progress is being made in the improvement of the country's highways. Tells story of highway problem and pictures many plans which have been put into use to improve the situation. General Motors Corp., Film Library, GM Bldg., Detroit 2, Mich. Cleared for TV. Purchase and loan.

THE CASE OF THE MISGUIDED KILLER (16mm sound motion) b&w 11 min. Starting with premise that safe driving practices acceptable years ago are no longer safe, film gives specific instructions regarding making left turns, pulling off highway, new "Yield" sign, and center-line laws. Progressive Pictures, 6351 Thornhill Dr., Oakland 11, Calif. Purchase.

Outdoor Advertising

Outdoor advertising posters are available through the Outdoor Advertising Association of America. Write to OAAA, attention Traffic Safety Committee, 24 W. Erie St., Chicago 10, Ill., for the name and address of your nearest distributor.

Newspaper Ads

A new series of newspaper mats on the theme of traffic safety has been designed for business concerns who wish to use traffic safety messages in their advertising.

The current Advertising Council packet which has been sent to daily and weekly newspapers throughout the country, includes ads on Speed Control, Driver Education, Enforcement and Support for local Safety Councils. Available in full-page, 1,000-, 600-, 200-, and 100-line sizes. For complete information and ad proofs, write the Advertising Council, Special Service Office, 425 N. Michigan Ave., Chicago 11, Ill.

Information on imprinting posters and leaflets may be obtained by writing to NATIONAL SAFETY COUNCIL, 425 N. Michigan Ave., Chicago.

Publications

The following publications are available from the National Safety Council:

Public Safety Memos.

No. 61—"Studying the Danger Spots in Traffic," 6 pp., 1954.

No. 95—"Reaction Time for Automobile Driving," 7 pp., 1955.

Are Seat Belts Good or Bad?—Eight-page reprint from TRAFFIC SAFETY consisting of questions and answers on the merits of seat belts. Many illustrations and charts. Quantity prices available from National Safety Council.

Action Program Leaflet Series—Prepared in cooperation with official organizations and intended for opinion leaders.

Enforcement—A Vital Key
Safer Drivers Through Licensing
Toward Court Improvement

For quantity prices write National Safety Council.

FREE OPERATION SAFETY MATERIALS

Basic aids to help you launch a successful campaign

TO DO the Operation Safety job thoroughly, you need all the tools. News releases, radio scripts, samples of leaflets and newspaper mats—formerly distributed in the Operation Safety kit—can be obtained by checking the Operation Safety box on the Reader Service Card contained in this issue of TRAFFIC SAFETY.

Here's what you get:

▸ **Four News Releases**—designed to feature local personalities and to highlight local conditions. Written by professional journalists, these releases point up the responsibility of each citizen to cooperate in the traffic safety program.

▸ **Four Radio Scripts**—five-minute, interview-type scrips on the Share the Road Driving safety theme. Each spotlights an appropriate local personality and is written for easy adaptation to local traffic situations. Scripts are tailored to fit the requirements of local stations.

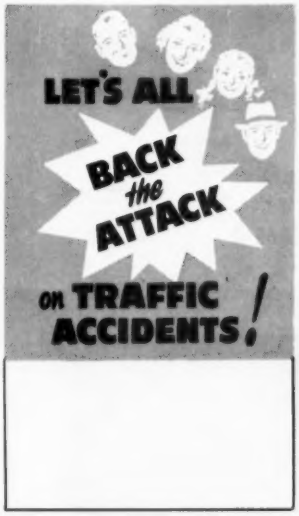
▸ **Newspaper Mats**—a sample of each of the featured mats on the Share the Road Driving theme. Designs are one-column miniatures of the featured poster designs shown on page 27.

▸ **Leaflets**—samples of the four featured leaflets illustrated on page 27. These handy, pocket-size giveaways tell a brief but hard-hitting traffic safety story in a way that captures interest.

▸ **Signs of Life**—sample folder describing the six standard safety signs and their use and importance. This attractive four-color publication does a good job of focusing attention on the need for shared responsibility in knowing and obeying traffic signs and markings.

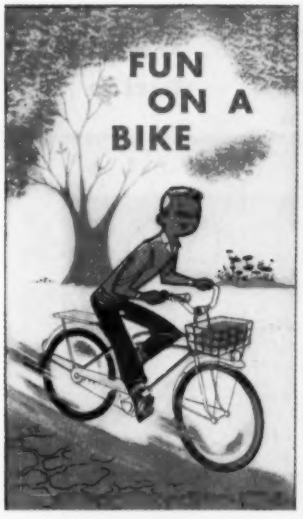
OPERATION SAFETY MATERIALS

TRAFFIC SAFETY PUBLICATIONS



LET'S ALL BACK THE ATTACK (397.13). Sold in packages of 1,000. Prices: 1-9 pkgs., $6.70 per pkg.; 10-99 pkgs., $5.70 per pkg.; 100-999 pkgs., $5.00 per pkg.; 1,000 or more pkgs., $4.50 per pkg.

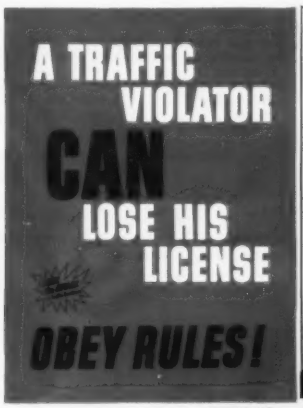
SEAT BELTS—A STEP TO SAFETY (391.60). Sold in packages of 100. Price:: 1-9 pkgs., $2.50 per pkg.; 10-49 pkgs., $2.00 per pkg.; 50-99 pkgs., $1.80 per pkg.; 100-199 pkgs., $1.60 per pkg. Write for prices on larger quantities.



FUN ON A BIKE (399.93). An eight-page booklet illustrating thirteen rules of bicycle safety. Price each: 10-99, $.08; 100-999, $.039; 1,000-4,999, $.03; 5,000 or more, $.028.

SIGNS MAKE THE WAY SAFE AND PLEASANT (399.77). Shows how traffic signs are truly your "Signs of Life" on today's busy highways. Sold in packages of 100 and 1,000. Price per 100: $.70. Price per 1,000 (M): 1M-5M, $39.00; 6M or more $36.00.

OPERATION SAFETY POSTERS FOR AUGUST POSTING

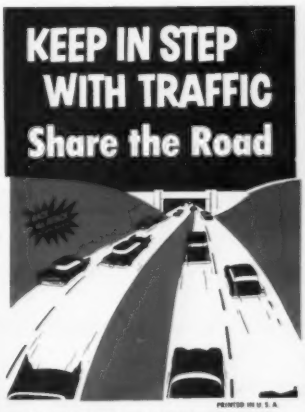


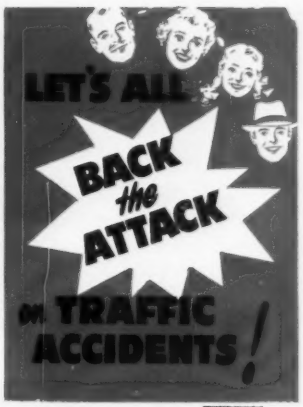
©NATIONAL SAFETY COUNCIL

T-1362-C	25"x38"
T-1363-A	8½"x11½"

©NATIONAL SAFETY COUNCIL

T-1364-B	17"x23"





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T-1073-C	25"x38"
T-1074-A	8½"x11½"

©NATIONAL SAFETY COUNCIL

T-1194-C	25"x38"
T-1195-A	8½"x11½"
T-1184-B	17"x23"

PRICES FOR ABOVE POSTERS

Traffic Posters—T-prefix to number

	1-9	10-99	100-999	1000-4999*
A Size	$0.15	$0.092	$0.063	$0.052
B Size	.25	.18	.15	.12
C Size	.35	.27	.22	.20

YOUR CREDIT LINE can be imprinted at time of the press run on Traffic B and C posters only. Orders for imprints must be received by June 15, 1958 for the posters above which are intended for August posting.

Imprinting charges for these posters are $2.25 per lot plus an initial charge for each electroplate of $21.00 for C posters imprint and $12.50 for B poster imprint.

*Write for prices on quantities of 5,000 or more or for special rates on annual poster orders. I column newspaper mats on these posters are available from the National Safety Council.

PRICES SHOWN ARE SUBJECT TO A DISCOUNT OF 10% TO NATIONAL SAFETY COUNCIL MEMBERS

FLEET POSTERS

POSTER PRICES

Posters illustrated on these pages are included in the automatic Motor Transportation poster services. Automatic poster sets are available on yearly subscription that provides (4) subjects per month viz. (2) "A" size (8½"x11½") and (2) "B" size (17"x23"). Automatic service is provided in the following categories:

City Truck	City Bus	Annual price 1-4 sets, $8.85 per set;
Intercity Truck	Intercity Bus	5-49 sets, $7.45 per set; 50 or more
Sales Truck	Taxicab	sets, $5.95 per set.
Truck Terminal	Bus Terminal	

Posters are available for individual selection at the following prices:

	1-9	10-99	100-999	1000-4999*
A size, any selection	.15	.092	.063	.052
B size, any selection	.30	.22	.185	.15

All prices shown are subject to a 10% discount to National Safety Council Members.
*Write for prices on quantities of 5,000 or more.

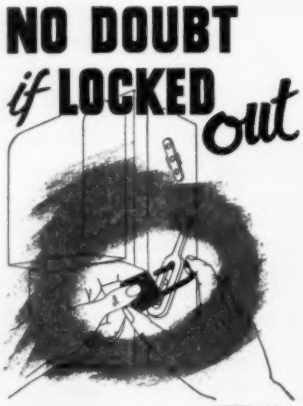
V-1365-B 17x23

1350-B 17x23

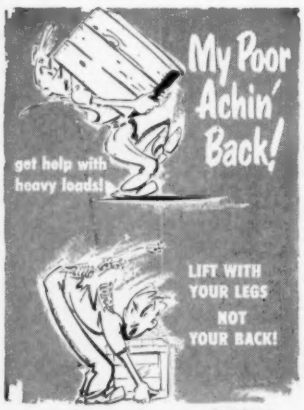
9088-A 8½x11½

0714-A 8½x11½

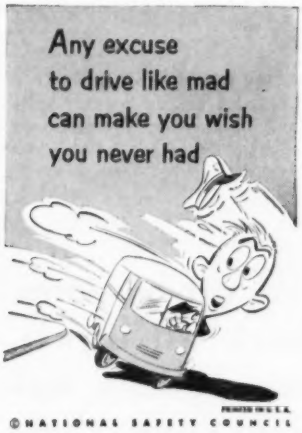
0895-B 17x23



0329-B 17x23



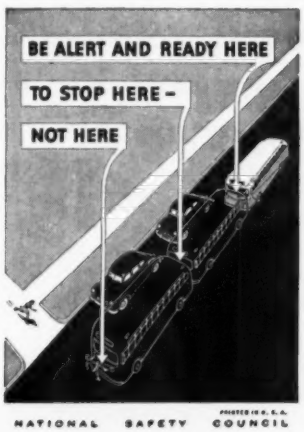
9923-B 17x23



V-1367-B 17x23

V-1366-A 8½x11½

V-0488-A 8½x11½

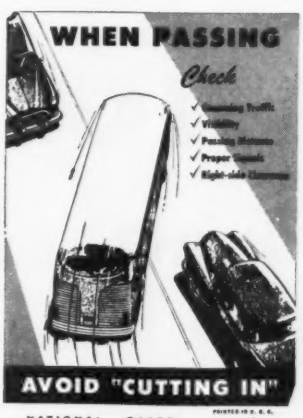


V-8522-B 17x23

V-0290-B 17x23

V-9000-B 17x23

V-7908-B 17x23



V-0489-B 17x23

V-0154-A 8½x11½

Truck driver warns: check all lights, turn signals; ask about roads; take emergency equipment; keep eyes moving constantly to prevent highway hypnosis!

DANGER in the night

ON the average, 61 persons are killed every night in automobile accidents on the nation's roads. Based on miles traveled, the night death toll is about three times greater than the daytime rate. Obviously, there are increased problems of driving after dark, so the average motorist, while driving at night, is in much greater danger than usual.

The problems created by darkness are many. And they are problems that only remotely are related to the normal problems of driving during full-light conditions. Unfortunately, too few motorists are aware of the dangers and the ways to combat them.

How best to drive after dark?

What can you do to stay safe while driving after sunset?

To illustrate answers to these important questions, we went to a night driving expert. The results of this investigation are significant, for they suggest practical solutions to one of the most destructive problems confronting persons concerned with safety: how to reduce the night accident toll.

The expert chosen for this investigation is Elmer Mahl, an over-the-road (OVR) driver for Spector-Mid-States, one of the nation's major truck lines. Mahl holds a 17-year National Safety Council Safe Driving Award. During the 17 years he has been driving OVR trucks, Mahl has driven a total of 1,750,000 miles. Eighty per cent of that mileage has been at night.

Yet Mahl never has had an accident in which he was charged with responsibility in any way. He has never been cited for a moving traffic violation of any sort. During an age when dented fenders and an occasional traffic citation are accepted as routine, Mahl's record verges on the unbelievable.

Mahl's route takes him—every other night—from Spector-Mid-State's main terminal, just south of Chicago's Loop, to Cleveland, Milwaukee and return or Clyde, Ohio. Let's ride along with Mahl on a typical all-night run from Chicago to Clyde, a distance of 286 miles.

Mahl's trip begins when he checks in with the dispatcher at the Chicago terminal sometime between 11:00 p.m. and midnight. The exact time is determined by the time he arrives in Chicago from his most recent trip. Interstate Commerce Commission regulations state that a driver must have at least eight hours off between trips. Further, Spector-Mid-State rules allow a driver a minimum of 10 hours off between trips at his home terminal.

About half a dozen drivers usually are in the driver waiting room. Some have just checked in from their trips. Others are waiting to be assigned equipment.

Weather and road conditions are the main subjects of conversation in the waiting room. Drivers just in from Cleveland report conditions on the Ohio Turnpike and Indiana Toll road. Drivers ask about specific places, noted for being unusually dangerous, on the roads they will travel.

Mahl, a small, soft-spoken man, listens carefully to conversations about road conditions. He nods his head thoughtfully when someone tells him a certain curve on Highway 6 is unusually slick. "You should take the time to find out everything you possibly can about a road you're going to use," he says in answer to a question about his interest in road conditions. "It's particularly true at night, because you can't always see the trouble spots."

Mahl, who has been driving since he was 15 and has been driving trucks

THE 286 MILE RUN BEGINS
A veteran truck driver for 17 years, Elmer Mahl checks road and weather conditions before trip.

MAKES FREQUENT STOPS
Experience taught Mahl that long rides must be broken up. After 50 miles he makes first stop.

DANGER IN THE NIGHT

since he was 17, follows a routine check pattern before he starts the motor of his truck.

"Any fool can drive. All he has to do is start the motor and steer. It takes a little extra effort to drive safely. However, if you've seen a few fatal accidents you don't mind taking a little extra time to be safe."

First he stows his suitcase—a small, metal case in which he carries shaving gear and other necessities for the overnight stop he will make in Clyde —securely on the rack behind him. In the event of a sudden stop, he won't have the case flying forward and hitting him. At night, he tells you, you sometimes have to stop fast when something appears out of the darkness.

Safety Check

While he stows his case, he also checks his safety equipment. Fusees and red flags are on the rack behind him. He also checks the flashlight he has with him for immediate use in case of an emergency. After dark, you need things that will make you be seen, he claims. Should his truck break down, he can use the auxiliary light and alert other motorists to his plight. Should his truck become disabled on the roadway, the light would be of utmost importance in warning other motorists of the danger his vehicle represents.

Next on Mahl's schedule is a check of lights. He puts on the rear lights and pushes up the turn signal indicator. Then he walks to the rear of the truck to determine if rear lights and the right-turn light are working properly. Next he checks the right-hand turn signal on the front of the truck.

Next, he goes back to the cab and pulls down the turn-signal lever. At the back of the truck he checks the left-turn signal. Then he goes to the front of the truck to check the turn-signal there. He also checks his brake lights.

"It takes a few minutes to check lights — particularly rear lights and turn signals," Mahl says, "but you need all the lights you can get. You can tell when your headlights go out, but you don't know when your rear lights stop working. The average motorist can have it done in a minute when he stops for gas. Some stations are including a light check as part of their service."

During his light check, Mahl also checks his tires and connections between the tractor and the trailer. Mahl's careful pre-trip checking is reflected in his low TD (trip delay) time, according to Spector-Mid-States records. "If you can find vehicle trouble before you start on a trip, you'll not only save a lot of time but there's also a good chance that you'll save yourself from getting in an accident," Mahl says. "If you break down at night, you can be in trouble."

Mahl also wipes the windshield of his truck and cleans with equal thoroughness the glass faces of the dashboard gauges. Light at night is precious, he explains, and there is no need to waste it with a dirty windshield. It's also important to make gauges easy to see in the darkened cab.

Mahl's equipment check is unhurried. But, the check completed, he goes about the task of getting his truck on the road and to its destination. There's a certain methodical determination about the way he closes his cab door, starts his engine and turns on his headlights.

Easing his truck and trailer to the scale where they will be weighed, Mahl exhibits the care with which he always drives. He looks at his two outside mirrors to see if other vehicles are moving toward him. He checks ahead and to either side for the same reason. Then, slowly, he engages the gears and moves the truck forward.

His airbrakes hiss as he stops his truck on the weighing platform. (The gross weight of Mahl's truck, trailer and load was just over 56,000 pounds). After he is waved on by the dispatcher, Mahl heads his truck out of his company's parking lot.

"Once you get out of the lot and drive a little you can tell how the trailer is loaded and how it handles. Weight and its distribution make a lot of difference." Mahl, who weighs only 137 pounds, handled his 28-ton load as if he were maneuvering a load of eggs.

Through the quiet streets of Chicago, Mahl drives his truck slowly. His eyes move all the time. In his rear-view mirrors he watches cars approaching from behind him. He notices traffic conditions several blocks ahead. He watches as a car zooms out of a side street and bumps to a halt.

"You have to watch side street and side road traffic at night," he says. "There aren't too many cars out at night, so a lot of drivers take chances at intersections. Too, a lot of intersections don't have very good signs, and the signs can hardly be seen after dark. So you have to watch for cross traffic."

Mahl, who estimates that he has driven almost 2,500,000 miles (almost 2,100,000 of them in commercial vehicles) since he began driving 24 years ago, says he prefers night driving. There is less traffic at night, and in the summer it is cooler. But he recognizes well the particular dangers of after-dark driving.

Night Speed Too Fast

Most motorists drive too fast at night, he says. As he guides his truck along Chicago's dark streets, he explains that most motorists seem to think they can drive as fast at night as during daylight. Some even seem to drive faster, he claims. "They don't seem to know how difficult it is to see at night. For practical purposes, a lot of them are driving blind."

The first stop in Mahl's trip is about 50 miles or two hours from Chicago. There are other drivers in the restaurant, and they exchange road information and discuss driving.

After a light lunch, coffee and a cigarette, Mahl continues his trip. He recounts how driving conditions have changed since he first got behind a wheel in 1934.

"Signs are the biggest single change in night safety I've seen," he says. "They used to be so small you couldn't see them, particularly at night. Now they've put reflective material on them. Now you can see signs.

"Roads are pretty much the same, except for turnpikes. But all the roads can't be turnpikes, so roads are just like they were a long time ago, except for the signs and markers. The signs make a lot of difference."

Speed is another accident-element that Mahl watches closely at night. He stays well within posted speed limits. Explaining that drivers "just cannot see well enough at night to go much faster," he never exceeds 45 mph, no matter what the posted limit.

And, as he nears an intersection, he points out a bright reflective sign. "That's the kind of sign I was talking about," he says, as he points at a sign that stands out in the darkness. "You can see them."

As the miles slip behind, you become aware of Mahl's constant shifting of his eyes. Now he looks quickly in the mirror outside his left door. Then he glances a few thousand feet up the road. Then he checks the mirror outside his left door. "You have to know where other cars are. And, at night, you have to know as soon as possible."

Later, he makes another stop for coffee, a snack and a cigarette. "I won't drive if I get a little tired," he explains. "Rather than do that, I'll pull off and sleep for a few minutes. You feel good after sleeping even for a little while. There's no sense trying to drive when you're tired, for it gets you at night. It's tough enough driving when you're feeling good. Driving when you're tired is too tough."

As the trip continues eastward, Mahl points out a red and black sedan that speeds around his truck. The car is on the wrong side of the yellow line for several hundred feet as it moves past Mahl's truck. "That's asking for it at night," Mahl exclaims. "You can't see far enough ahead of you at night anyway. Passing like that on a hill can really put you in bad shape. And there's no way to get out of such a situation."

Mahl, who was born in Chicago and has lived there all his life, has adapted well to over-the-road driving. For example, he has learned well how to use the headlights of other motorists. "Watch approaching headlights on hills. You can see light from cars coming up the other side of a hill long before you can see the car it is coming from. This is one advantage of night driving, for you don't have this advance warning during daylight. You can see the light from other cars on curves, too, before you actually see the car. That's a good warning.

"Headlight dimming is something else that's important at night. Not only dimming when you're approaching another car but dimming when you come up behind a car. You can blind a driver almost as badly by shining your 'brights' into his mirror as you can by shining them right into his eyes from straight ahead.

"However, if someone doesn't dim his lights as he approaches, the only thing to do is avoid the lights by looking to the right. Usually, you can see the right edge of the road, and some states are putting down special white lines that make it easier for you to see.

"But if you can't see the edge of the road as a guide, there's a little trick that may help you. Guide yourself on the oil line down the center of your lane. Most concrete roads have an oil line down the center of each lane, and you can use it as a guide in an emergency."

As faint streaks of light begin to appear in the east, a farm truck with a load of hay sagging to the right pulls out from a side road and drives

Turn Page

"TOUGH DRIVING"
Driving tired is "too tough," so Mahl makes regular stops to relax.

ADVANCES IN SAFETY
Reflective material on signs aids driver. Remembering the old, small signs, Mahl appreciates the change.

along in front of Mahl's truck. Traveling slowly, the farm truck hugs the center line in what seems to be an effort by the farmer to compensate for his sagging load.

"Motorists ought to know that the center line is their lifeline on the highway," Mahl comments. "Particularly at night, when you cannot see far ahead. States spend good money to put down center lines, but a lot of motorists don't recognize the importance of them. They're as important as signs. They're sort of a continual sign."

In Ohio, Mahl makes the last coffee stop of his trip. He relaxes from the strain of driving on a dark night. Sipping his coffee, he tells what he thinks should be done to make night driving safer. Drivers should turn on their headlights — not parking lights — as soon as it gets a little dark. "It doesn't cost any more to use headlights," he explains.

"Give a lot of warning to other drivers at night. If you're going to turn several hundred yards up the road, let the other drivers on the road know it. Flick on your turn signal far in advance. Pump your brakes as you slow down for a turn, so the car behind you sees for sure that you are planning to slow down for a turn. Motorists are dependent on your car lights at night. They probably can't see your car, but they can see your lights. So use your lights, and use them as soon as possible.

"Never let your gas tank get below the one-fourth-full mark. If you run out of gas at night you not only might be inconvenienced but you might also end up stranded on a dangerous spot on the road.

"If you have any sort of emergency, pull off the road. Get all the way off. If there isn't a shoulder, throw out a fusee and drift a few hundred yards down the road. If you can't get off the road and you can't move your car, get a fusee down, as fast as possible, at a place a couple hundred yards behind you.

"People should have their headlights aimed, and I think there should be a law that people have their headlight aim checked every year."

During the last leg of the trip, you notice that Mahl has used his truck horn only three times. "There's no need to use your horn. It's much better to use your eyes. Your eyes are what save you. You have to keep looking around and far ahead of you if you want to stay safe at night."

Watching the increasing number of cars and trucks on the roads and streets during early morning hours, Mahl carefully moves his truck in, through and out of Fremont, Ohio, last town before Clyde and the end of his trip. The night driving portion of his trip is done, and Mahl relaxes slightly. His eyes now check various land marks. "One thing about driving during daylight is that you get a lot of scenery changes. At night, you don't have much chance to look in different directions. That's why you hear so much about highway hypnosis at night."

At the Spector-Mid-States relay and maintenance station in Clyde, the trip comes to an abrupt end. The truck and trailer are parked behind the terminal and Mahl checks in with the Clyde dispatcher. After a meal, a shower and conversation with other drivers, Mahl sleeps on one of the bunks provided by the company. That night he'll start back for Chicago. And, although the average driver is in greater danger after dark on the highway, the odds are overwhelmingly in favor of Elmer Mahl getting back to Chicago without an accident. He has too much respect for the dangers of darkness to do otherwise.

KEEPS GAS TANK FULL
Mahl's gas tank never hits below the one-fourth mark—he won't be stranded at a dangerous spot.

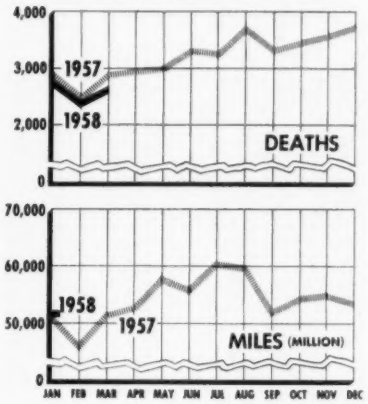
"DAWN IS TRICKY"
Mahl uses lights until the sun is completely up. At dawn, "you have to look twice to see something."

From Page 4

The three leading cities in each population group at the end of three months, ranked according to the number of deaths per 10,000 registered vehicles were:

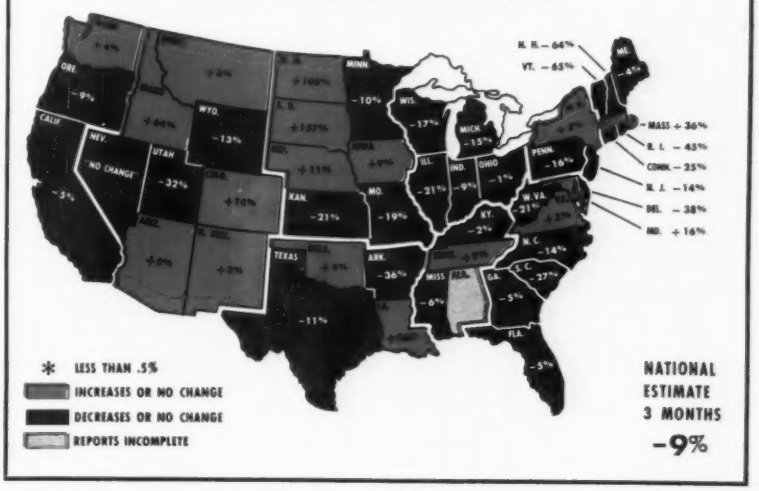
	Reg. Rate	Pop. Rate
Group I (Over 1,000,000)		
Detroit, Mich.	1.9	6.5
Chicago, Ill.	2.6	6.9
Los Angeles, Calif.	3.0	15.5
Group II (750,000 to 1,000,000)		
Washington, D. C.	1.8	4.8
St. Louis, Mo.	2.1	7.5
San Francisco, Calif.	2.9	10.8
Group III (500,000 to 750,000)		
Minneapolis, Minn.	1.1	4.6
Milwaukee, Wis.	1.9	6.8
Cincinnati, Ohio	2.0	7.3
Group IV (350,000 to 500,000)		
Denver, Colo.	1.3	5.9
Indianapolis, Ind.	1.4	6.9
Memphis, Tenn.	1.4	4.1
Group V (200,000 to 350,000)		
Wichita, Kan.	0.3	1.8
Syracuse, N. Y.	0.5	1.9
Toledo, Ohio	1.1	5.3
Group VI (100,000 to 200,000)		
Kansas City, Kan.	0.0	0.0
Rockford, Ill.	0.0	0.0
Wilmington, Del.	0.0	0.0
Group VII (50,000 to 100,000)		
Orlando, Fla.	0.0	0.0
Santa Ana, Calif.	0.0	0.0
Pueblo, Colo.	0.0	0.0
Group VIII (25,000 to 50,000)		
Las Vegas, Nev.	0.0	0.0
Boise, Idaho	0.0	0.0
Odessa, Texas	0.0	0.0
Group IX (10,000 to 25,000)		
Kingsport, Tenn.	0.0	0.0
Medford, Ore.	0.0	0.0
Napa, Calif.	0.0	0.0

MONTHLY MOTOR VEHICLE DEATHS AND TRAFFIC TRENDS 1957-1958



STATE and city death records listed on these pages are reported to the Council by state and city agencies participating in the Council's accident reporting project. Reporting deadline for cities, the 23rd—for states, the 25th, of the following month.

CHANGES IN MOTOR-VEHICLE DEATHS
FIRST 3 MONTHS, 1957 TO 1958



MOTOR VEHICLE DEATHS AND DEATH RATES
1956, 1957 and 1958

Month	1956	1957	1958	1956-58 Change	1957-58 Change
January	2,954	2,880	2,740	— 8%	—5%
February	2,652	2,480	2,360	—11%	—5%
March	2,940	2,890	2,630	—11%	—9%
Three Months	8,546	8,250	7,730	—10%	—6%
April	2,970	2,950			
May	3,094	3,000			
June	3,338	3,310			
July	3,555	3,240			
August	3,535	3,690			
September	3,653	3,330			
October	3,476	3,450			
November	3,603	3,570			
December	3,858	3,710			
Total	39,628	38,500			

All 1956 figures are from the National Office of Vital Statistics.

All other figures are National Safety Council estimates. The 1958 national estimate is arrived at by assuming that the percentage change from 1957 to 1958 in the states reporting for both years reflects the 1957-1958 change in the entire country. First reports are preliminary, so revisions are made from time to time as later reports are received for the various months. Thus, figures above for 1958 may differ slightly from figures for the same months which will be published in future issues of TRAFFIC SAFETY.

TRAFFIC DEATHS—CITY RECORDS

The table covers only motor-vehicle deaths resulting from traffic accidents that occurred in the city. Nontraffic motor-vehicle deaths (where the accident occurred on home or work premises) are not included; nor are deaths in the city from accidents occurring outside.

Rankings are based on the 1958 registration death rate which is the number of deaths per 10,000 registered motor vehicles on an annual basis. Vehicle registration figures are for the year 1957 and were supplied by R. L. Polk & Company.

Cities are ranked by death rates—from low to high. When two or more cities have exactly the same rate, ranking is by total vehicle registrations—from large to small.

Cities shown in heavy type have improved in 1958 compared with 1957.

The population death rate is the number of deaths per 100,000 population on an annual basis. Populations are as of April, 1950, or later censuses taken by the U. S. Bureau of the Census.

	Three Months 1958	1957	1956	1958 Reg. Rate	1958 Pop. Rate
ALL REPORTING CITIES				2.1	8.4
Group I (1,000,000 and over)					
1. Detroit, Mich.	31	48	59	1.9	6.5
2. Chicago, Ill.	65	69	80	2.6	6.9
3. Los Angeles, Calif.	87	104	101	3.0	15.5
4. Philadelphia, Pa.	40	45	56	3.2	7.7
All cities in this group				3.3	8.9
5. Baltimore, Md.	29	15	31	3.7	11.2
6. New York, N. Y.	165	146	159	4.8	8.5
Group II (750,000 to 1,000,000)					
1. Washington, D. C.	10	16	23	1.8	4.8
2. St. Louis, Mo.	16	19	31	2.1	7.5
All cities in this group				2.5	8.2
3. San Francisco, Calif.	21	24	19	2.9	10.8
4. Cleveland, Ohio	23	25	28	3.0	9.5
Group III (500,000 to 750,000)					
1. Minneapolis, Minn.	6	14	3	1.1	4.6
2. Milwaukee, Wis.	12	18	25	1.9	6.8
3. Cincinnati, Ohio	10	19	14	2.0	7.3
4. Houston, Texas	22	26	23	2.4	12.4
5. Dallas, Texas	17	20	3	2.5	11.7
6. Boston, Mass.	11	9	15	2.5	6.1
7. Seattle, Wash.	17	9	17	2.5	11.9
All cities in this group				2.7	10.0
8. New Orleans, La.	14	28	22	3.2	9.3
9. Buffalo, N. Y.	16	12	8	3.3	10.6
10. Pittsburgh, Pa.	18	10	14	3.6	10.6
11. San Diego, Calif.	25	15	13	5.8	20.0
Group IV (350,000 to 500,000)					
1. Denver, Colo.	7	5	7	1.3	5.9
2. Indianapolis, Ind.	8	11	9	1.4	6.9
3. Memphis, Tenn.	5	6	12	1.4	4.1
4. Portland, Ore.	10	13	17	1.9	9.7
5. Kansas City, Mo.	10	11	8	2.5	8.7
All cities in this group				2.5	10.1
6. San Antonio, Texas	13	16	13	2.6	11.4
7. Louisville, Ky.	12	12	13	3.0	12.2
8. Columbus, Ohio	15	9	11	3.4	13.9
9. Atlanta, Ga.	19	25	17	4.2	15.5
10. Birmingham, Ala.	13	12	12	4.3	14.5
Group V (200,000 to 350,000)					
1. Wichita, Kans.	1	3	3	0.3	1.8
2. Syracuse, N. Y.	1	1	3	0.5	1.9
3. Toledo, Ohio	4	7	6	1.1	5.3
4. Dayton, Ohio	4	6	5	1.1	6.2
5. Flint, Mich.	3	4	0	1.1	5.9
6. Rochester, N. Y.	4	6	3	1.2	4.6
7. Providence, R. I.	3	4	2	1.3	4.8
8. Oklahoma City, Okla.	7	4	6	1.9	9.8
9. St. Paul, Minn.	7	6	7	2.0	8.9
All cities in this group				2.0	9.2
10. Long Beach, Calif.	7	23	6	2.1	8.3
11. Fort Worth, Texas	9	8	14	2.2	10.9
12. Miami, Fla.	13	10	3	2.3	20.1
13. Tampa, Fla.	7	4	8	2.4	10.4
14. Richmond, Va.	7	4	11	2.5	11.8
15. Norfolk, Va.	6	0	3	2.7	8.0
16. Omaha, Neb.	8	3	3	2.9	11.5
17. Akron, Ohio	9	16	6	2.9	11.8
18. Worcester, Mass.	5	1	2	3.4	9.9
19. Jacksonville, Fla.	9	4	4	4.3	14.4
20. El Paso, Texas	11	3	11	6.2	17.6
Group VI (100,000 to 200,000)					
1. Kansas City, Kans.	0	4	0	0.0	0.0
2. Rockford, Ill.	0	5	0	0.0	0.0
3. Wilmington, Del.	0	2	1	0.0	0.0
4. Bridgeport, Conn.	0	0	4	0.0	0.0
5. Hartford, Conn.	0	1	2	0.0	0.0
6. Jackson, Miss.	0	4	2	0.0	0.0
7. Saginaw, Mich.	0	7	6	0.0	0.0
8. Madison, Wis.	0	0	0	0.0	0.0
9. Allentown, Pa.	0	3	0	0.0	0.0
10. Utica, N. Y.	0	0	0	0.0	0.0
11. Fresno, Calif.	1	3	4	0.4	3.3
12. Erie, Pa.	1	4	0	0.6	2.9
13. Evansville, Ind.	1	5	1	0.6	2.4
14. Arlington, Va.	1	2	1	0.7	2.6
15. Peoria, Ill.	1	4	1	0.7	3.4
16. Yonkers, N. Y.	1	3	2	0.8	2.2
17. Lubbock, Texas	1	1	2	0.8	3.8
18. Lincoln, Neb.	1	2	5	0.8	3.3
19. Reading, Pa.	1	1	0	0.9	3.5
20. Charlotte, N. C.	2	4	9	0.9	5.1
21. Hammond, Ind.	1	7	1	1.1	3.7
22. Shreveport, La.	2	2	4	1.1	5.1
23. Austin, Texas	2	2	4	1.2	4.9
24. Waterbury, Conn.	1	1	0	1.2	3.5
25. Salt Lake City, Utah	3	1	3	1.2	6.2
26. Grand Rapids, Mich.	4	6	11	1.4	8.2
27. Spokane, Wash.	3	4	3	1.4	6.4
28. Montgomery, Ala.	2	0	1	1.4	6.9
29. New Haven, Conn.	2	4	2	1.5	4.8
30. Savannah, Ga.	2	3	4	1.6	6.1
31. Amarillo, Texas	2	2	5	1.6	8.0
32. Sacramento, Calif.	4	2	7	1.7	10.2
33. Gary, Ind.	3	5	6	1.7	7.1
All cities in this group				1.7	8.1
34. Fort Wayne, Ind.	4	3	3	2.0	11.0
35. Tacoma, Wash.	4	6	4	2.1	10.2
36. Niagara Falls, N. Y.	2	1	2	2.2	7.9
37. Des Moines, Iowa	5	4	3	2.3	10.9
38. Little Rock, Ark.	3	2	4	2.3	11.2
39. Youngstown, Ohio	5	4	6	2.5	11.3
40. Canton, Ohio	4	5	3	2.5	12.5
41. San Jose, Calif.	6	3	6	2.7	18.8
42. Waco, Texas	3	3	4	2.7	11.9
43. Knoxville, Tenn.	4	1	2	2.7	12.8
44. Phoenix, Ariz.	11	3	10	2.8	27.5
45. Glendale, Calif.	4	5	3	3.0	14.0
46. Trenton, N. J.	4	2	5	3.0	12.5
47. Pasadena, Calif.	5	4	8	3.1	17.5
48. Elizabeth, N. J.	3	6	3	3.3	10.2
49. Springfield, Mass.	5	1	7	3.3	12.0
50. Baton Rouge, La.	6	4	2	3.5	16.7
51. Nashville, Tenn.	9	3	6	3.6	20.7
52. Corpus Christi, Texas	7	6	5	4.0	19.3
53. Chattanooga, Tenn.	6	6	7	4.2	18.3
54. Duluth, Minn.	5	3	1	4.6	18.9
55. Mobile, Ala.	8	3	7	5.0	18.4
Group VII (50,000 to 100,000)					
1. Orlando, Fla.	0	2	4	0.0	0.0
2. Santa Ana, Calif.	0	0	2	0.0	0.0
3. Pueblo, Colo.	0	0	0	0.0	0.0
4. Macon, Ga.	0	2	0	0.0	0.0
5. Springfield, Mo.	0	1	1	0.0	0.0
6. Jackson, Mich.	0	1	3	0.0	0.0
7. Battle Creek, Mich.	0	1	0	0.0	0.0
8. Columbus, Ga.	0	0	1	0.0	0.0
9. Lancaster, Pa.	0	2	1	0.0	0.0
10. Hayward, Calif.	0	0	0	0.0	0.0
11. Racine, Wis.	0	0	2	0.0	0.0
12. Davenport, Iowa	0	1	0	0.0	0.0
13. Green Bay, Wis.	0	0	1	0.0	0.0
14. Augusta, Ga.	0	1	1	0.0	0.0
15. Evanston, Ill.	0	0	0	0.0	0.0
16. Bethlehem, Pa.	0	0	2	0.0	0.0
17. Portsmouth, Va.	0	0	2	0.0	0.0
18. Mount Vernon, N. Y.	0	0	1	0.0	0.0
19. Asheville, N. C.	0	0	0	0.0	0.0
20. Bay City, Mich.	0	1	1	0.0	0.0
21. Sioux Falls, S. D.	0	0	0	0.0	0.0
22. Kenosha, Wis.	0	0	0	0.0	0.0
23. Portland, Me.	0	2	4	0.0	0.0
24. Pawtucket, R. I.	0	1	0	0.0	0.0
25. Parma, Ohio	0	1	1	0.0	0.0
26. Elmira, N. Y.	0	0	0	0.0	0.0
27. Alameda, Calif.	0	0	1	0.0	0.0
28. Medford, Mass.	0	2	3	0.0	0.0
29. Dubuque, Iowa	0	1	2	0.0	0.0
30. West Allis, Wis.	0	1	2	0.0	0.0
31. Bloomfield, N. J.	0	1	1	0.0	0.0
32. W. Hartford, Conn.	0	0	1	0.0	0.0
33. Woonsocket, R. I.	0	1	0	0.0	0.0
34. Norwalk, Conn.	0	4	3	0.0	0.0
35. Raleigh, N. C.	1	2	1	0.8	5.6
36. Beaumont, Texas	1	0	0	0.8	4.3
37. Columbia, S. C.	1	5	2	0.9	4.2
38. Schenectady, N. Y.	1	2	1	0.9	4.3
39. Alexandria, Va.	1	3	1	0.9	4.7
40. Colorado Spgs., Colo.	1	1	1	0.9	6.4
41. Tucson, Ariz.	2	5	3	0.9	11.4
42. Royal Oak, Mich.	1	2	2	1.0	5.6
43. Greenville, S. C.	1	1	2	1.0	6.2
44. Newton, Mass.	1	6	1	1.1	4.6
45. Binghamton, N. Y.	1	1	0	1.1	4.9
46. Wichita Falls, Texas	1	2	3	1.1	4.4
47. Hamilton, Ohio	1	1	2	1.1	5.7
48. Terre Haute, Ind.	1	0	3	1.1	6.1
49. Johnstown, Pa.	1	3	0	1.1	6.3
50. Santa Barbara, Calif.	1	1	1	1.2	7.2
51. Ogden, Utah	1	0	0	1.2	6.1
52. Warren, Ohio	1	0	1	1.3	7.0
53. Reno, Nev.	1	1	0	1.3	7.6
54. Stockton, Calif.	2	4	1	1.3	10.5
55. St. Joseph, Mo.	1	1	3	1.4	5.1
56. Aurora, Ill.	1	2	0	1.4	7.0
57. Manchester, N. H.	1	1	2	1.4	4.6
58. Lansing, Mich.	2	0	1	1.4	8.1
59. Lorain, Ohio	1	0	2	1.5	6.4
60. Richmond, Calif.	1	1	5	1.5	4.0
61. San Leandro, Calif.	1	2	1	1.5	6.3
62. Ann Arbor, Mich.	1	0	0	1.5	7.2
63. Winston-Salem, N. C.	2	1	0	1.5	8.8
64. New Britain, Conn.	1	1	1	1.5	4.6
65. Topeka, Kans.	2	1	1	1.5	9.7
66. Lakewood, Ohio	1	0	1	1.6	5.7
67. Kalamazoo, Mich.	2	2	3	1.6	13.3
68. Pensacola, Fla.	2	0	1	1.6	15.7
69. Covington, Ky.	1	2	2	1.6	6.2
70. Springfield, Ill.	2	1	1	1.6	9.7
All cities in this group				1.6	7.7
71. New Rochelle, N. Y.	1	0	2	1.7	5.5
72. Burbank, Calif.	2	1	2	1.7	8.8
73. Oak Park, Ill.	1	0	2	1.8	6.5
74. Council Bluffs, Iowa	1	0	3	1.9	7.5
75. Lexington, Ky.	2	0	0	1.9	11.9
76. Euclid, Ohio	1	2	3	2.0	7.0
77. Springfield, Ohio	2	0	1	2.0	9.3
78. Lynchburg, Va.	1	2	1	2.1	7.5
79. Joliet, Ill.	2	1	0	2.1	13.2
80. Tuscaloosa, Ala.	1	0	3	2.1	7.0
81. Lwr. Merion Twp., Pa.	1	1	1	2.2	6.9
82. Muncie, Ind.	2	0	4	2.3	12.3
83. Meriden, Conn.	1	0	3	2.3	6.9
84. Durham, N. C.	2	1	1	2.4	11.2
85. Waltham, Mass.	1	0	1	2.4	8.0
86. Stamford, Conn.	2	1	1	2.7	9.1
87. San Mateo, Calif.	2	1	2	2.8	12.1
88. Pomona, Calif.	2	2	1	2.8	13.6
89. Lynn, Mass.	2	0	2	2.8	8.1
90. East Orange, N. J.	2	4	2	3.0	9.3
91. San Bernardino, Calif.	4	2	6	3.1	19.3
92. Cedar Rapids, Iowa	3	3	1	3.2	15.2
93. W. Palm Beach, Fla.	3	3	7	3.3	23.5
94. Greensboro, N. C.	4	2	2	3.4	19.7
95. Sioux City, Iowa	3	2	3	3.7	13.5
96. Pontiac, Mich.	5	0	1	3.7	24.8
97. Santa Monica, Calif.	3	2	3	4.0	15.7
98. Charleston, S. C.	2	1	3	4.0	11.4
99. Pittsfield, Mass.	2	0	1	4.1	14.5
100. Wilkes-Barre, Pa.	3	1	0	4.3	15.6
101. Brookline, Mass.	2	0	2	4.5	14.1
102. Compton, Calif.	4	2	2	4.6	25.1
103. East Chicago, Ind.	2	1	1	4.6	14.0
104. Wheeling, W. Va.	3	2	2	5.1	20.4
105. Gadsden, Ala.	2	3	0	5.2	12.4
106. Berwyn, Ill.	3	0	0	5.3	22.8
107. Brockton, Mass.	3	1	0	5.4	19.1

	Three Months 1958	1957	1956	1958 Reg. Rate	1958 Pop. Rate
108. Decatur, Ill.	6	2	2	5.7	32.0
109. Atlantic City, N. J.	2	0	3	6.4	13.0
110. Waterloo, Iowa	5	1	3	6.5	28.6
111. Fort Smith, Ark.	4	5	2	7.2	26.7
112. Hampton, Va.	7	0	4	11.5	36.7

Group VIII (25,000 to 50,000)

1. Las Vegas, Nev.	0	0	0	0.0	0.0
2. Boise, Idaho	0	1	1	0.0	0.0
3. Odessa, Texas	0	0	1	0.0	0.0
4. Yakima, Wash.	0	0	1	0.0	0.0
5. Birmingham, Mich.	0	1	0	0.0	0.0
6. Palo Alto, Calif.	0	1	1	0.0	0.0
7. Tyler, Texas	0	0	0	0.0	0.0
8. White Plains, N. Y.	0	1	0	0.0	0.0
9. Vancouver, Wash.	0	4	1	0.0	0.0
10. Elkhart, Ind.	0	1	0	0.0	0.0
11. Poughkeepsie, N. Y.	0	0	0	0.0	0.0
12. Kettering, Ohio	0	2	0	0.0	0.0
13. Tallahassee, Fla.	0	0	0	0.0	0.0
14. Lafayette, Ind.	0	0	0	0.0	0.0
15. Everett, Wash.	0	0	1	0.0	0.0
16. Ontario, Calif.	0	0	0	0.0	0.0
17. Kokomo, Ind.	0	0	1	0.0	0.0
18. Cheyenne, Wyo.	0	0	0	0.0	0.0
19. Casper, Wyo.	0	0	0	0.0	0.0
20. Elyria, Ohio	0	0	0	0.0	0.0
21. East Detroit, Mich.	0	1	0	0.0	0.0
22. Wilmington, N. C.	0	2	2	0.0	0.0
23. Appleton, Wis.	0	0	0	0.0	0.0
24. Mt. Clemens, Mich.	0	1	0	0.0	0.0
25. Zanesville, Ohio	0	0	0	0.0	0.0
26. Rock Island, Ill.	0	0	0	0.0	0.0
27. La Crosse, Wis.	0	1	0	0.0	0.0
28. Wauwatosa, Wis.	0	1	1	0.0	0.0
29. Cuyahoga Falls, Ohio	0	0	1	0.0	0.0
30. Enid, Okla.	0	0	0	0.0	0.0
31. Newburgh, N. Y.	0	1	0	0.0	0.0
32. Sheboygan, Wis.	0	0	2	0.0	0.0
33. Pine Bluff, Ark.	0	2	1	0.0	0.0
34. Bloomington, Ind.	0	0	0	0.0	0.0
35. Danville, Va.	0	2	0	0.0	0.0
36. Champaign, Ill.	0	0	1	0.0	0.0
37. Burlington, N. C.	0	1	0	0.0	0.0
38. East Cleveland, Ohio	0	0	1	0.0	0.0
39. Beloit, Wis.	0	2	0	0.0	0.0
40. Chicopee, Mass.	0	0	2	0.0	0.0
41. Eau Claire, Wis.	0	0	0	0.0	0.0
42. Portsmouth, Ohio	0	0	2	0.0	0.0
43. Arlington, Mass.	0	0	0	0.0	0.0
44. Gainesville, Fla.	0	0	0	0.0	0.0
45. Ferndale, Mich.	0	1	0	0.0	0.0
46. Mishawaka, Ind.	0	3	0	0.0	0.0
47. Wausau, Wis.	0	0	1	0.0	0.0
48. Roseville, Mich.	0	4	0	0.0	0.0
49. Sandusky, Ohio	0	0	0	0.0	0.0
50. Granite City, Ill.	0	0	2	0.0	0.0
51. Galesburg, Ill.	0	0	0	0.0	0.0
52. Steubenville, Ohio	0	2	1	0.0	0.0
53. Bloomington, Ill.	0	3	0	0.0	0.0
54. Rome, N. Y.	0	0	0	0.0	0.0
55. Jackson, Tenn.	0	0	0	0.0	0.0
56. Hamden, Conn.	0	0	0	0.0	0.0
57. Findlay, Ohio	0	1	1	0.0	0.0
58. Kingston, N. Y.	0	0	0	0.0	0.0
59. West Haven, Conn.	0	0	0	0.0	0.0
60. Norwich, Conn.	0	0	4	0.0	0.0
61. Manhattan Bch., Calif.	0	1	1	0.0	0.0
62. Chicago Heights, Ill.	0	0	1	0.0	0.0
63. Fitchburg, Mass.	0	0	0	0.0	0.0
64. Fairmont, W. Va.	0	0	0	0.0	0.0
65. Mason City, Iowa	0	0	0	0.0	0.0
66. New Kensington, Pa.	0	0	1	0.0	0.0
67. Park Ridge, Ill.	0	0	0	0.0	0.0
68. St. Cloud, Minn.	0	0	0	0.0	0.0
69. Kearny, N. J.	0	0	1	0.0	0.0
70. St. Louis Pk., Minn.	0	0	0	0.0	0.0
71. Torrington, Conn.	0	1	0	0.0	0.0
72. National City, Calif.	0	0	0	0.0	0.0
73. Provo, Utah	0	0	1	0.0	0.0
74. Bangor, Me.	0	0	1	0.0	0.0
75. Greenville, Miss.	0	0	0	0.0	0.0
76. Milford, Conn.	0	0	0	0.0	0.0
77. Redlands, Calif.	0	1	1	0.0	0.0
78. Freeport, Ill.	0	1	2	0.0	0.0
79. New London, Conn.	0	0	1	0.0	0.0
80. Burlington, Vt.	0	0	0	0.0	0.0
81. Minot, N. D.	0	0	0	0.0	0.0
82. Superior, Wis.	0	1	2	0.0	0.0
83. Temple, Texas	0	2	2	0.0	0.0
84. Bristol, Conn.	0	0	0	0.0	0.0
85. Webster Groves, Mo.	0	2	0	0.0	0.0
86. Richland, Wash.	0	0	0	0.0	0.0
87. Grand Forks, N. D.	0	0	0	0.0	0.0
88. Concord, N. H.	0	0	1	0.0	0.0
89. Denton, Texas	0	0	1	0.0	0.0
90. Urbana, Ill.	0	0	0	0.0	0.0
91. Selma, Ala.	0	0	0	0.0	0.0
92. Winona, Minn.	0	0	5	0.0	0.0
93. Annapolis, Md.	0	0	0	0.0	0.0
94. Belmont, Mass.	0	1	1	0.0	0.0
95. Park Forest, Ill.	0	0	0	0.0	0.0
96. Muskegon, Mich.	1	0	1	1.1	8.3
97. Billings, Mont.	1	0	0	1.4	10.4
98. Wyandotte, Mich.	1	2	0	1.5	8.5
99. High Point, N. C.	1	0	0	1.5	9.1
All cities in this group				1.5	7.3
100. St. Clair Shores, Mich.	1	0	2	1.6	8.3
101. Spartanburg, S. C.	1	0	0	1.6	9.6
102. Waukegan, Ill.	1	0	1	1.7	8.3
103. Great Falls, Mont.	1	0	1	1.8	8.6
104. Elgin, Ill.	1	1	1	1.8	8.4
105. Hutchinson, Kans.	1	0	0	1.0	10.9
106. Beverly Hills, Calif.	1	0	1	1.9	13.2
107. Vallejo, Calif.	1	1	0	1.9	9.1
108. Plainfield, N. J.	1	0	0	1.9	8.5
109. Owensboro, Ky.	1	0	0	2.0	10.3
110. Culver City, Calif.	1	1	0	2.1	12.7
111. Hagerstown, Md.	1	0	1	2.1	10.4
112. Salina, Kans.	1	0	0	2.1	12.3
113. Rome, Ga.	1	0	2	2.1	12.4
114. University City, Mo.	1	0	0	2.1	8.4
115. Richmond, Ind.	1	0	0	2.1	10.1
116. Aurora, Colo.	1	0	0	2.1	16.0
117. Bellingham, Wash.	1	0	1	2.2	10.9
118. Oshkosh, Wis.	1	0	1	2.2	9.1
119. Coral Gables, Fla.	1	1	3	2.2	13.7
120. Rapid City, S. D.	1	2	0	2.2	10.0
121. Marion, Ohio	1	0	0	2.2	11.3
122. Hamtramck, Mich.	1	1	1	2.3	8.7
123. Fargo, N. D.	1	0	0	2.3	9.7
124. Alton, Ill.	1	3	0	2.4	12.2
125. Elmhurst, Ill.	1	0	0	2.4	11.5
126. Stratford, Conn.	1	2	0	2.5	9.5
127. Daly City, Calif.	1	0	1	2.5	13.1
128. Maywood, Ill.	1	0	1	2.5	13.8
129. Greenwich, Conn.	1	1	1	2.5	8.4
130. Michigan City, Ind.	1	2	0	2.5	12.6
131. Danbury, Conn.	1	2	0	2.5	10.5
132. Mansfield, Ohio	2	0	2	2.6	18.3
133. Janesville, Wis.	1	0	0	2.6	12.5
134. Manchester, Conn.	1	4	2	2.6	9.1
135. Westfield, N. J.	1	0	0	2.7	15.4
136. Burlington, Iowa	1	3	1	2.8	13.1
137. Redwood City, Calif.	2	1	4	2.8	20.5
138. Fond du Lac, Wis.	1	0	0	2.8	12.0
139. Walla Walla, Wash.	1	0	0	2.9	15.7
140. Manitowoc, Wis.	1	0	0	2.9	13.3
141. Lockport, N. Y.	1	0	0	2.9	14.8
142. Watertown, N. Y.	1	1	1	3.0	11.3
143. Rock Hill, S. C.	1	0	1	3.0	12.0
144. Midland, Texas	2	2	1	3.0	21.9
145. West Covina, Calif.	1	2	1	3.0	9.8
146. Hazel Park, Mich.	1	0	0	3.0	15.1
147. Petersburg, Va.	1	0	0	3.0	11.0
148. Hackensack, N. J.	1	0	1	3.1	12.5
149. Modesto, Calif.	3	0	1	3.2	35.5
150. Florence, S. C.	1	2	0	3.2	14.0
151. Rahway, N. J.	1	0	1	3.2	14.9
152. Richfield, Minn.	1	0	0	3.3	11.3
153. Shaker Heights, Ohio	1	0	0	3.3	11.6
154. Montclair, N. J.	1	0	1	3.3	8.9
155. Sumter, S. C.	1	0	0	3.4	15.9
156. Clearwater, Fla.	2	1	2	3.4	27.5
157. Middletown, Conn.	1	1	0	3.8	11.1
158. Middletown, Ohio	2	3	0	3.9	23.2
159. Newark, Ohio	2	1	0	3.9	20.7
160. Quincy, Ill.	2	1	2	4.0	18.9
161. Pasadena, Texas	2	0	0	4.0	16.8
162. Highland Pk., Mich.	2	0	3	4.1	17.2
163. Moline, Ill.	2	2	1	4.2	21.1
164. Ventura, Calif.	2	0	0	4.2	30.9
165. Livonia, Mich.	2	3	2	4.4	20.6
166. Rochester, Minn.	2	1	0	4.6	25.6
167. Lincoln Park, Mich.	2	1	2	4.6	18.0
168. Daytona Beach, Fla.	2	2	1	4.7	22.1
169. East Hartford, Conn.	2	1	1	4.8	20.7
170. Vineland, N. J.	2	0	5	5.2	24.2
171. Newport News, Va.	2	1	0	5.4	16.4
172. West Orange, N. J.	2	1	1	5.6	25.3
173. Baldwin Park, Calif.	2	0	0	5.8	24.8
174. Fair Lawn, N. J.	2	0	0	5.9	29.1
175. Fairfield, Conn.	2	0	0	6.3	26.2
176. Teaneck, N. J.	2	1	0	6.4	20.9
177. Warwick, R. I.	3	0	1	6.6	27.9
178. Revere, Mass.	2	4	2	7.8	20.2
179. Linden, N. J.	3	2	1	8.0	32.8
180. Pocatello, Idaho	5	0	1	11.5	75.8

Group IX (10,000 to 25,000)

1. Kingsport, Tenn.	0	0	0	0.0	0.0
2. Medford, Ore.	0	0	0	0.0	0.0
3. Napa, Calif.	0	3	1	0.0	0.0
4. Benton Harbor, Mich.	0	0	0	0.0	0.0
5. Victoria, Texas	0	2	0	0.0	0.0
6. Butler, Pa.	0	0	0	0.0	0.0
7. South Euclid, Ohio	0	0	1	0.0	0.0
8. Klamath Falls, Ore.	0	0	0	0.0	0.0
9. Holland, Mich.	0	0	0	0.0	0.0
10. Boulder, Colo.	0	0	0	0.0	0.0
11. Fort Myers, Fla.	0	0	0	0.0	0.0
12. Greeley, Colo.	0	1	0	0.0	0.0
13. Lake Worth, Fla.	0	3	0	0.0	0.0
14. Monroe, Mich.	0	0	0	0.0	0.0
15. La Mesa, Calif.	0	0	0	0.0	0.0
16. Greensburg, Pa.	0	0	0	0.0	0.0
17. Homewood, Ala.	0	0	0	0.0	0.0
18. Waukesha, Wis.	0	0	2	0.0	0.0
19. Yuma, Ariz.	0	0	0	0.0	0.0
20. Austin, Minn.	0	0	0	0.0	0.0
21. Shorewood, Wis.	0	0	0	0.0	0.0
22. Ponca City, Okla.	0	0	1	0.0	0.0
23. Houma, La.	0	1	0	0.0	0.0
24. Niles, Mich.	0	2	0	0.0	0.0
25. Pampa, Texas	0	1	1	0.0	0.0
26. Bell, Calif.	0	0	1	0.0	0.0
27. Uniontown, Pa.	0	0	0	0.0	0.0
28. Statesville, N. C.	0	0	0	0.0	0.0
29. Lawrence, Kans.	0	0	0	0.0	0.0
30. Kinston, N. C.	0	0	0	0.0	0.0
31. Morristown, N. J.	0	0	0	0.0	0.0
32. Sherman, Texas	0	0	0	0.0	0.0
33. Fremont, Ohio	0	0	2	0.0	0.0
34. Kenmore, N. Y.	0	0	0	0.0	0.0
35. Bloomington, Minn.	0	0	1	0.0	0.0
36. Ocala, Fla.	0	1	5	0.0	0.0
37. La Grange, Ill.	0	0	0	0.0	0.0
38. Carlsbad, N. M.	0	2	1	0.0	0.0
39. Floral Park, N. Y.	0	0	0	0.0	0.0
40. Wooster, Ohio	0	0	0	0.0	0.0
41. Great Bend, Kans.	0	0	0	0.0	0.0
42. Plainview, Texas	0	0	0	0.0	0.0
43. Bismarck, N. D.	0	0	0	0.0	0.0
44. Helena, Mont.	0	0	0	0.0	0.0
45. Meadville, Pa.	0	0	0	0.0	0.0
46. Traverse City, Mich.	0	1	1	0.0	0.0
47. Borger, Texas	0	0	1	0.0	0.0
48. Tiffin, Ohio	0	0	0	0.0	0.0
49. Port Chester, N. Y.	0	0	1	0.0	0.0
50. Frederick, Md.	0	0	0	0.0	0.0
51. Westport, Conn.	0	2	1	0.0	0.0
52. Owosso, Mich.	0	0	0	0.0	0.0
53. Goshen, Ind.	0	0	0	0.0	0.0
54. Edina, Minn.	0	1	0	0.0	0.0
55. Huntington, Ind.	0	0	1	0.0	0.0
56. Jeffersonville, Ind.	0	0	0	0.0	0.0
57. Sedalia, Mo.	0	0	0	0.0	0.0
58. Hibbing, Minn.	0	0	0	0.0	0.0
59. Peru, Ind.	0	0	0	0.0	0.0
60. East Haven, Conn.	0	1	0	0.0	0.0
61. Hanford, Calif.	0	0	0	0.0	0.0
62. Ottawa, Ill.	0	1	0	0.0	0.0
63. North Platte, Neb.	0	0	0	0.0	0.0
64. Bristol, Pa.	0	0	0	0.0	0.0
65. Ashland, Ohio	0	0	1	0.0	0.0
66. Corvallis, Ore.	0	0	3	0.0	0.0
67. Valparaiso, Ind.	0	0	0	0.0	0.0
68. Caldwell, Idaho	0	0	0	0.0	0.0
69. Griffin, Ga.	0	0	0	0.0	0.0
70. Pittsburg, Kans.	0	0	0	0.0	0.0
71. Muscatine, Iowa	0	1	3	0.0	0.0
72. Frankfort, Ind.	0	0	0	0.0	0.0
73. Marietta, Ohio	0	1	0	0.0	0.0
74. Maple Heights, Ohio	0	1	1	0.0	0.0
75. Wheaton, Ill.	0	1	0	0.0	0.0
76. Highland Park, Ill.	0	0	1	0.0	0.0
77. Reidsville, N. C.	0	1	0	0.0	0.0
78. Streator, Ill.	0	0	0	0.0	0.0
79. Woodland, Cal'f.	0	1	0	0.0	0.0
80. Xenia, Ohio	0	0	0	0.0	0.0
81. Wisconsin Rpds., Wis.	0	0	0	0.0	0.0
82. Martinsburg, W. Va.	0	2	0	0.0	0.0
83. S. St. Paul, Minn.	0	0	0	0.0	0.0
84. Cranford, N. J.	0	0	0	0.0	0.0
85. Mt. Vernon, Ill.	0	0	0	0.0	0.0
86. Albert Lea, Minn.	0	2	0	0.0	0.0
87. Texarkana, Ark.	0	1	0	0.0	0.0
88. Cape Girardeau, Mo.	0	0	0	0.0	0.0
89. Emporia, Kans.	0	0	0	0.0	0.0
90. Johnson City, N. Y.	0	0	0	0.0	0.0
91. Connersville, Ind.	0	0	0	0.0	0.0
92. Bellevue, Pa.	0	0	0	0.0	0.0
93. Sterling, Ill.	0	0	0	0.0	0.0
94. Port Angeles, Wash.	0	0	0	0.0	0.0
95. Berkley, Mich.	0	2	0	0.0	0.0
96. East Lansing, Mich.	0	0	0	0.0	0.0
97. Alpena, Mich.	0	1	1	0.0	0.0
98. Madison Hts., Mich.	0	0	0	0.0	0.0
99. St. Augustine, Fla.	0	1	0	0.0	0.0
100. Pittsburg, Calif.	0	0	1	0.0	0.0
101. Oswego, N. Y.	0	1	0	0.0	0.0
102. Newport Bch., Calif.	0	0	0	0.0	0.0
103. Wallingford, Conn.	0	0	2	0.0	0.0
104. El Dorado, Kans.	0	2	0	0.0	0.0
105. Greenwood, Miss.	0	0	0	0.0	0.0
106. Arkansas City, Kans.	0	1	0	0.0	0.0
107. Massena, N. Y.	0	0	0	0.0	0.0
108. Suffolk, Va.	0	0	0	0.0	0.0
109. Cedar Falls, Iowa	0	1	1	0.0	0.0
110. Brainerd, Minn.	0	0	0	0.0	0.0
111. Niles, Ohio	0	1	1	0.0	0.0

	Three Months 1958	1957	1956	1958 Reg. Rate	1958 Pop. Rate
112. North Miami, Fla.	0	0	0	0.0	0.0
113. Elmwood Park, Ill.	0	0	1	0.0	0.0
114. McAlester, Okla.	0	0	0	0.0	0.0
115. Newton, Kans.	0	0	0	0.0	0.0
116. Stevens Point, Wis.	0	0	1	0.0	0.0
117. Muskegon Hts., Mich.	0	0	0	0.0	0.0
118. Canton, Ill.	0	0	0	0.0	0.0
119. Brookfield, Ill.	**0**	**1**	**0**	**0.0**	**0.0**
120. Pasco, Wash.	0	0	0	0.0	0.0
121. Owatonna, Minn.	0	0	0	0.0	0.0
122. South Portland, Me.	0	0	0	0.0	0.0
123. The Dalles, Ore.	**0**	**1**	**0**	**0.0**	**0.0**
124. Faribault, Minn.	0	0	1	0.0	0.0
125. Norfolk, Neb.	0	0	0	0.0	0.0
126. Boone, Iowa	0	0	0	0.0	0.0
127. Rocky River, Ohio	0	0	0	0.0	0.0
128. Attleboro, Mass.	0	0	0	0.0	0.0
129. Watertown, Wis.	0	0	0	0.0	0.0
130. Astoria, Ore.	**0**	**1**	**1**	**0.0**	**0.0**
131. North Adams, Mass.	0	0	1	0.0	0.0
132. East Moline, Ill.	0	0	0	0.0	0.0
133. Bristol, Va.	0	0	0	0.0	0.0
134. Fergus Falls, Minn.	0	0	0	0.0	0.0
135. S. Milwaukee, Wis.	**0**	**2**	**1**	**0.0**	**0.0**
136. Lamesa, Texas	0	0	0	0.0	0.0
137. Winfield, Kans.	0	0	0	0.0	0.0
138. Naugatuck, Conn.	**0**	**1**	**0**	**0.0**	**0.0**
139. Mamaroneck, N. Y.	0	0	0	0.0	0.0
140. St. Joseph, Mich.	0	0	0	0.0	0.0
141. Hawthorne, N. J.	0	0	0	0.0	0.0
142. Sault Ste. Marie, Mich.	**0**	**1**	**0**	**0.0**	**0.0**
143. Wethersfield, Conn.	**0**	**1**	**1**	**0.0**	**0.0**
144. Villa Park, Ill.	0	0	1	0.0	0.0
145. Winnetka, Ill.	0	0	0	0.0	0.0
146. Windham, Conn.	**0**	**1**	**1**	**0.0**	**0.0**
147. Conneaut, Ohio	0	0	0	0.0	0.0
148. Garden City, Kans.	0	0	2	0.0	0.0
149. Needham, Mass.	0	0	1	0.0	0.0
150. Marshfield, Wis.	0	0	0	0.0	0.0
151. Livermore, Calif.	**0**	**1**	**0**	**0.0**	**0.0**
152. Hopewell, Va.	0	0	0	0.0	0.0
153. Escanaba, Mich.	0	0	1	0.0	0.0
154. Prescott, Ariz.	0	0	1	0.0	0.0
155. Beaver Dam, Wis.	0	0	0	0.0	0.0
156. Rye, N. Y.	0	0	0	0.0	0.0
157. State College, Pa.	0	0	0	0.0	0.0
158. Mitchell, S. D.	0	0	0	0.0	0.0
159. Virginia, Minn.	0	0	0	0.0	0.0
160. Ansonia, Conn.	**0**	**1**	**0**	**0.0**	**0.0**
161. Van Wert, Ohio	0	0	0	0.0	0.0
162. Du Bois, Pa.	0	0	0	0.0	0.0

	Three Months 1958	1957	1956	1958 Reg. Rate	1958 Pop. Rate
163. Darien, Conn.	0	0	1	0.0	0.0
164. River Rouge, Mich.	0	0	2	0.0	0.0
165. Bowling Green, Ohio	**0**	**1**	**0**	**0.0**	**0.0**
166. Vernon, Conn.	0	0	1	0.0	0.0
167. Mansfield, Conn.	**0**	**1**	**1**	**0.0**	**0.0**
168. Central Falls, R. I.	0	0	0	0.0	0.0
169. Grosse Pt. Wds., Mich.	0	0	0	0.0	0.0
170. Albion, Mich.	0	0	1	0.0	0.0
171. Deyersburg, Tenn.	**0**	**1**	**0**	**0.0**	**0.0**
172. Menasha, Wis.	0	0	0	0.0	0.0
173. Bellefontaine, Ohio	0	0	0	0.0	0.0
174. University Hts., Ohio	0	0	0	0.0	0.0
175. Los Alamos, N. M.	0	0	0	0.0	0.0
176. Ecorse, Mich.	**0**	**1**	**0**	**0.0**	**0.0**
177. Red Wing, Minn.	0	0	0	0.0	0.0
178. Hornell, N. Y.	0	0	0	0.0	0.0
179. Charles City, Iowa	0	0	0	0.0	0.0
180. River Forest, Ill.	**0**	**1**	**0**	**0.0**	**0.0**
181. Bemidji, Minn.	0	0	0	0.0	0.0
182. Windsor, Conn.	0	0	2	0.0	0.0
183. Cadillac, Mich.	0	0	0	0.0	0.0
184. Grosse Pte. Pk., Mich.	**0**	**1**	**0**	**0.0**	**0.0**
185. Cudahy, Wis.	**0**	**1**	**0**	**0.0**	**0.0**
186. Swampscott, Mass.	0	0	0	0.0	0.0
187. Ironwood, Mich.	0	0	1	0.0	0.0
188. Two Rivers, Wis.	0	0	0	0.0	0.0
189. Niles, Ill.	0	0	0	0.0	0.0
190. Milford, Mass.	0	0	0	0.0	0.0
191. Bellaire, Ohio	0	0	0	0.0	0.0
192. Winchester, Conn.	0	0	0	0.0	0.0
193. La Salle, Ill.	0	0	0	0.0	0.0
194. Branford, Conn.	0	0	0	0.0	0.0
195. West Lafayette, Ind.	0	0	0	0.0	0.0
196. Moscow, Idaho	0	0	0	0.0	0.0
197. Stoughton, Mass.	0	0	0	0.0	0.0
198. Fort Thomas, Ky.	**0**	**2**	**0**	**0.0**	**0.0**
199. Fairfield, Ala.	0	0	0	0.0	0.0
200. Ridgefield Pk., N. J.	**0**	**1**	**0**	**0.0**	**0.0**
201. Webster, Mass.	0	0	0	0.0	0.0
202. Derby, Conn.	**0**	**1**	**0**	**0.0**	**0.0**
203. Ashland, Wis.	0	0	0	0.0	0.0
204. Takoma Park, Md.	0	0	0	0.0	0.0
205. Amherst, Mass.	0	0	0	0.0	0.0
206. Killingly, Conn.	**0**	**1**	**0**	**0.0**	**0.0**
207. Donora, Pa.	0	0	0	0.0	0.0
208. Watertown, Conn.	0	0	0	0.0	0.0
209. Stonington, Conn.	**0**	**1**	**0**	**0.0**	**0.0**
210. Enfield, Conn.	0	0	1	0.0	0.0
All cities in this group				1.0	5.2
211. Covina, Calif.	1	0	1	2.1	28.6
212. Santa Cruz, Calif.	1	0	1	2.2	17.5

	Three Months 1958	1957	1956	1958 Reg. Rate	1958 Pop. Rate
213. Ypsilanti, Mich.	1	1	0	2.3	16.1
214. Chico, Calif.	1	0	0	2.4	32.0
215. Salisbury, N. C.	**1**	**4**	**0**	**2.7**	**19.0**
216. Lodi, Calif.	1	0	0	2.9	23.1
217. Endicott, N. Y.	1	0	1	3.4	20.4
218. Whitefish Bay, Wis.	1	0	0	3.5	21.7
219. Ames, Iowa	1	0	0	3.7	17.0
220. Monterey, Calif.	1	1	0	3.9	18.3
221. Denison, Texas	1	1	0	3.9	19.2
222. Aberdeen, S. D.	1	0	1	4.2	18.1
223. Wilmette, Ill.	1	0	0	4.2	19.5
224. Robbinsdale, Minn.	2	0	0	4.3	49.3
225. Leominster, Mass.	1	0	0	4.4	16.1
226. Calumet City, Ill.	**1**	**2**	**1**	**4.5**	**19.5**
227. Las Cruces, N. M.	1	1	1	4.5	24.7
228. Stillwater, Okla.	1	1	0	4.6	19.8
229. Highland Pk., Texas	1	0	0	4.6	32.8
230. New Bern, N. C.	1	1	0	4.7	21.4
231. Moorhead, Minn.	1	0	0	4.7	22.5
232. Monroe, N. C.	1	0	1	4.8	38.1
233. Antioch, Calif.	1	0	1	5.2	25.8
234. Sweetwater, Texas	1	0	1	5.4	29.4
235. South Orange, N. J.	1	0	0	5.6	24.7
236. El Cerrito, Calif.	1	0	1	5.6	16.9
237. Atchison, Kans.	1	0	0	5.9	31.3
238. Longview, Wash.	2	0	0	5.9	34.3
239. Albany, Calif.	1	0	0	6.0	22.7
240. Gardner, Mass.	1	0	0	6.1	19.9
241. Lufkin, Texas	2	0	0	6.7	46.0
242. Orange, Calif.	2	0	2	6.7	37.6
243. Marinette, Wis.	1	0	0	7.1	28.2
244. North Chicago, Ill.	1	0	2	7.6	21.6
245. Groton, Conn.	1	0	0	8.3	18.3
246. Beacon, N. Y.	1	1	0	8.5	26.7
247. Southington, Conn.	1	1	0	8.7	30.5
248. La Porte, Ind.	3	1	0	9.4	56.6
249. Brawley, Calif.	2	0	1	12.1	59.7
250. W. Springfield, Mass.	3	0	1	12.6	52.4
251. Middleborough, Mass.	2	0	0	15.0	72.1
252. Shelton, Conn.	4	0	0	24.8	97.6
CANADIAN CITIES					
Medicine Hat, Alta.	0	0	0	—	0.0
Red Deer, Alta.	0	0	0	—	0.0
Edmonton, Alta.	1	2	3	—	2.5
Calgary, Alta.	2	0	2	—	6.2
Hamilton, Ont.	4	7	8	—	7.7
Montreal, Que.	21	34	21	—	8.2
Toronto, Ont.	35	34	18	—	10.1
Vancouver, B. C.	9	8	9	—	10.4
Lethbridge, Alta.	1	1	0	—	17.5

TRAFFIC DEATHS—STATE RECORDS

Deaths are reported by state traffic authorities.

All figures are preliminary. To insure proper comparisons, 1957 and 1956 figures cover the same reporting period as those for 1958.

Population Rate: U. S. population rate is the estimated annual number of deaths per 100,000 population, assuming that deaths for the rest of the year will follow the normal seasonal pattern. State population rate is the estimated annual number of deaths per 100,000 population, assuming that the monthly average of deaths will remain at the present average for the rest of the year. Population rates are based on July 1, 1957 population estimates, U. S. Bureau of the Census, Washington, D. C.

States shown in heavy type have improved in 1958 compared with 1957, or showed no change.

Mileage Rate: The number of deaths per 100 million vehicle miles of travel.

(Figures in parenthesis following the 1958 mileage rate indicate the number of months for which the mileage rate is calculated for each state.)

*Less than .5%.

	Months Reported	Deaths Identical Periods 1958	1957	1956	% Changes 1957 to 1958	1956 to 1958	1958 Pop. Rate	1958 Mile. Rate	
TOTAL U.S.	3	7,730	8,250	8,546	— 6%	— 10%	20.3	5.3	(1)
Ala.	2	111	118	132	— 6%	— 16%	21.1	—	—
Ariz.	3	122	116	109	+ 5%	+ 12%	43.0	7.8	(1)
Ark.	3	83	130	98	— 36%	— 15%	18.8	—	—
Calif.	3	741	778	757	— 5%	— 2%	21.3	4.5	(1)
Colo.	3	65	57	74	+ 14%	— 12%	15.5	—	—
Conn.	3	43	57	64	— 25%	— 33%	7.6	—	—
Del.	3	13	21	17	— 38%	— 24%	11.9	2.8	(1)
D. of C.	3	10	16	23	— 38%	— 57%	4.8	1.0	(1)
Fla.	3	289	304	340	— 5%	— 15%	28.2	6.6	(1)
Ga.	3	208	219	258	— 5%	— 19%	22.0	5.4	(1)
Idaho	3	46	28	43	+ 64%	+ 7%	28.8	—	—
Ill.	3	381	480	418	— 21%	— 9%	15.8	—	—
Ind.	3	204	224	254	— 9%	— 20%	18.0	4.2	(1)
Ia.	3	140	128	153	+ 9%	— 8%	20.0	6.6	(1)
Kans.	3	91	115	145	— 21%	— 37%	17.0	4.6	(1)
Ky.	3	179	183	144	— 2%	+ 24%	23.6	5.3	(1)
La.	3	221	176	175	+ 26%	+ 26%	28.8	7.2	(1)
Me.	3	23	24	25	— 4%	— 8%	9.8	4.8	(1)
Md.	3	115	99	121	+ 16%	— 5%	15.9	5.8	(1)
Mass.	3	118	87	114	+ 36%	+ 4%	9.7	3.7	(1)
Mich.	3	263	308	386	— 15%	— 32%	13.5	3.7	(1)
Minn.	3	120	134	76	— 10%	+ 58%	14.5	4.2	(1)
Miss.	3	89	95	115	— 6%	— 23%	16.3	4.4	(1)
Mo.	3	169	209	247	— 19%	— 32%	15.9	3.4	(1)
Mont.	3	39	38	33	+ 3%	+ 18%	23.4	—	—
Neb.	3	60	54	76	+ 11%	— 21%	16.5	4.5	(1)
Nev.	3	19	19	28	0%	— 32%	28.5	—	—
N. H.	3	5	14	17	— 64%	— 71%	3.5	1.5	(1)
N. J.	3	159	185	191	— 14%	— 17%	11.3	4.2	(1)
N. M.	3	78	76	79	+ 3%	— 1%	37.6	11.2	(1)
N. Y.	3	443	435	448	+ 2%	— 1%	11.2	5.3	(1)
N. C.	3	198	231	243	— 14%	— 19%	17.6	4.5	(1)
N. D.	3	25	12	13	+108%	+ 92%	15.5	—	—
Ohio	3	404	408	442	— 1%	— 9%	17.6	4.8	(1)
Okla.	3	142	156	130	+ 4%	+ 9%	24.9	—	—
Ore.	3	81	89	81	— 9%	0%	18.3	—	—
Pa.	3	301	360	389	— 16%	— 23%	10.9	4.3	(1)
R. I.	3	11	20	11	— 45%	0%	5.3	2.8	(1)
S. C.	3	135	186	147	— 27%	— 8%	22.8	7.1	(1)
S. D.	3	54	21	31	+157%	+ 74%	30.8	11.3	(1)
Tenn.	3	151	139	168	+ 9%	— 10%	17.4	5.6	(1)
Texas	3	485	542	564	— 11%	— 14%	21.2	4.0	(1)
Utah	3	28	41	43	— 32%	— 35%	13.2	—	—
Vt.	3	8	23	19	— 65%	— 58%	8.5	2.9	(1)
Va.	3	179	173	169	+ 3%	+ 6%	18.9	5.4	(1)
Wash.	3	116	112	96	+ 4%	+ 21%	17.0	6.3	(1)
W. Va.	3	70	89	78	— 21%	— 10%	14.2	—	—
Wis.	3	151	181	175	— 17%	— 14%	15.6	3.9	(1)
Wyo.	3	26	30	27	— 13%	— 4%	32.9	7.5	(1)
CANADIAN PROVINCES									
Alta.	3	56	29	34	+ 93%	+ 65%	23.8	—	—
B. C.	2	36	28	30	+ 29%	+ 20%	18.5	—	—
Man.	2	9	15	14	— 40%	— 36%	7.0	—	—
Sask.	2	13	5	5	+160%	+160%	9.4	—	—

MOTOR-VEHICLE DEATHS AND INJURIES BY STATES — 1958 and 1957

Thirty-five states and the District of Columbia reported their injury and death experience for January 1958. Twenty-three states and the District of Columbia reported increases in injuries and twelve states showed decreases compared with January 1957.

For the same period, eighteen states and the District of Columbia showed decreases in deaths, four states showed no change and thirteen states reported increases compared with January 1957.

MOTOR-VEHICLE DEATHS AND INJURIES BY STATES

1957 and 1958

	Months Reported	Deaths††		Injuries††		% Change 1957 to 1958		1958 Ratio of Injuries to Deaths
		1958	1957	1958	1957	Deaths	Injuries	
TOTAL U. S.	**	1,893	2,110	70,728	68,707	— 10	+ 3	37
Ala.	1	51	49	323†	322†	+ 4	+ *	6
Ariz.	1	39	43	696	663	— 9	+ 5	18
Ark.	1	26	50	249	233	— 48	+ 7	10
Calif.	1	243	261	10,428	10,801	— 7	— 3	43
Colo.	1	22	20	791	679	+ 10	+ 16	36
Conn.	1	12	18	1,938	1,966	— 33	— 1	162
Del.	1	4	7	160	173	— 43	— 8	40
D. of C.	1	2	5	516	466	— 60	+ 11	258
Fla.	1	110	105	3,552	2,970	+ 5	+ 20	32
Ga.	1	66	57	1,206	693	+ 16	+ 74	18
Idaho								
Ill.	1	113	165	7,878	8,056	— 32	— 2	70
Ind.	1	65	81	2,663	3,104	— 20	— 14	41
Ia.								
Kans.	1	33	33	1,237	741	0	+ 67	37
Ky.	1	42	63	1,145	943	— 33	+ 21	27
La.								
Me.	1	13	7	493	459	+ 86	+ 7	38
Md.	1	31	29	1,485	1,273	+ 7	+ 17	48
Mass.								
Mich.	1	87	98	4,029	4,763	— 11	— 15	46
Minn.	1	46	46	2,085	1,749	0	+ 19	45
Miss.	1	27	32	519	483	— 16		
Mo.	1	47	74	754	870	— 36	— 13	16
Mont.								
Neb.	1	20	9	750	604	+122	+ 24	38
Nev.								
N. H.	1	2	6	480	610	— 67	— 21	240
N. J.								
N. M.	1	37	31	385	303	+ 19	+ 27	10
N. Y.								
N. C.	1	53	97	1,613	1,467	— 45	+ 10	30
N. D.								
Ohio	1	140	140	5,898	6,006	0	— 2	42
Okla.	1	41	41	1,098	1,131	0	— 3	27
Ore.	1	31	27	1,340	1,140	+ 15	+ 18	43
Pa.	1	128	126	6,548	6,121	+ 2	+ 7	51
R. I.								
S. C.	1	47	59	654	845	— 20	— 23	14
S. D.	1	23	9	299	159	+156	+ 19	13
Tenn.	1	58	55	1,005	971	+ 5	+ 4	17
Texas	1	142	178	5,183	4,934	— 20	+ 5	37
Utah	1	8	16	380	372	— 50	+ 2	48
Vt.	1	3	7	272	290	— 57	— 6	91
Va.								
Wash.	1	51	34	2,068	1,827	+ 50	+ 13	41
W. Va.	1	30	32	608	520	— 6	+ 17	20
Wis.								
Wyo.								

†Rural injuries only.

††All figures are preliminary. To insure proper comparisons, 1957 figures cover the same reporting period as those for 1958.

*Less than .5%.

**Death and injury totals cover reports for all months indicated in this column.

Council Announces Staff Promotions

Six staff appointments at the National Safety Council have been announced by Gen. George C. Stewart, executive vice president.

W. C. Johnson, who has been associated with statistics, membership, and program planning at the Council since 1937, was named general manager. Formerly assistant general manager for programs, he was succeeded by Henry J. Hoeffer, a retired brigadier general with the Army engineers.

The new manager of the membership and sales department is H. W. Champlin, formerly assistant department manager and director of the advertising and exhibits bureau. He succeeded Duane A. Pickerell, who left the staff in December. Robert O. Jones, formerly assistant advertising and exhibits director, now heads the bureau.

Robert Meyer, for 11 years a member of the public information department in various capacities, was named editorial director with responsibility for all Council magazines. Angela Maher, who has worked on Council traffic publications since 1951, was named editor of TRAFFIC SAFETY magazine. Frank Davin resigned as editor in April.

Farm Safety Week

"When you work for safety—safety works for you."

That's the theme of the 15th annual National Farm Safety Week, which will be observed July 20-26. It is cosponsored by the National Safety Council and the U. S. Department of Agriculture.

Purpose of the special week, which has been proclaimed by President Eisenhower, is to prevent accidents to farm families—in the home, in the field and on the highway.

Accidents to farm residents take nearly 13,000 lives and injure more than a million persons annually. Farming has more deaths each year than any other major industry.

Civic Leaders Pinpoint Needs

From Page 9

Discussing city needs, Chester E. Peterson, Newton city manager, called for "state encouragement and matching of federal funds to eliminate all railroad grade crossings on highways and main thoroughfares of cities."

MICHIGAN

Governor G. Mennen Williams told his delegates that the average citizen pays for enforcement and protection. For this reason, he said, there can be no question about the citizens' vested interest in accident prevention.

Chairman L. R. Kamperman, vice president, Leonard Refineries, Inc., said the conference implied that the citizens realized their civic duty, and were not content to sit by and leave the problem to government.

The delegation backed a proposal for an implied consent and chemical test law, in addition to the Governor's four-point safety attack: driver education, improved licensing methods, more public support groups, and stronger public information programs.

MINNESOTA

Gov. Orville L. Freeman's personal safety consultant, Arthur V. Rohweder, gave delegates a five-point program to cut traffic accidents: an "implied consent chemical test law, periodic motor vehicle inspections, a changed arrest law to permit officer to arrest for a traffic misdemeanor he did not see, state licensing of private driver training schools and more severe penalties for driving after having a license suspended."

Delegates decided that Minnesota's prime need was increased manpower to improve traffic safety—in enforcement, organizing, and promoting programs.

MISSOURI—Stepped up driver training and the organization of a citizen safety group were among the top proposals by Missouri representatives. Speaking on the teen-age traffic problem, Dr. E. M. Funk, University of Missouri, blamed adults for the bad driving habits of youngsters.

Chairman A. A. Fowler, Sr., president, Indianapolis-Kansas City Express, urged delegates to take home the following priority suggestions: increased manpower for state highway patrol, stepped-up enforcement, legislation for legal recognition of chemical intoxication tests, changes in driver licensing regulations and a license revocation system for major offenses.

NEBRASKA—Led by chairman James F. Green, Omaha attorney, delegates discussed ways to improve driver education and personnel. Other urgent needs: coordination of state and local safety organizations, greater public support, expansion of the state patrol and re-examination of all drivers.

Mrs. Roy Magill, president, Nebraska Women's Clubs, pointed out the need for an expansion of information facilities on traffic accident prevention.

NORTH DAKOTA—Education—both in school and among adults—was a prime need urged by Attorney General Leslie R. Burgum. Two other targets were improved record keeping and stricter driver licensing.

The delegates' decision to concentrate efforts on only three areas, according to Chairman George Dixon, manager, Automobile Dealers Assn. of North Dakota, was to make a "sharpshooter's" approach to solving the traffic problem.

OHIO—Continued legislative action was urged by delegates at the sessions under Chairman Edwin J. Thomas, president, The Goodyear Tire and Rubber Co.

Such legislation to solve Ohio's traffic problem would only be possible through the efforts of citizen support, according to Chalmers E. Wylie, first assistant to Gov. C. William O'Neill.

Other recommendations were: improved driver education in schools, increased police staffs, more uniform traffic laws, stepped-up traffic engineering, revamping traffic court procedures and promoting interest at the grass roots level.

OKLAHOMA—Improving the state traffic court system was called for by Judge P. James Demopolos, chairman, Governor's Special Traffic Safety Committee. Other recommendations were: legislation to standardize the state traffic code, action to increase public support of the state safety council and improvement in the driver education program.

Mayor Bryson Berry of Enid said cities can improve their accident record by having stricter licensing control. However, he felt that limited finances force cities to depend on state help for most other improvements.

Chairman of the delegation was Stanley Learned, assistant to the president, Phillips Petroleum Co.

SOUTH DAKOTA—A stricter driver license law and a point system assessing violators were proposed by Don Rounds, state safety director.

Delegates decided on four additional points for emphasis: periodic motor vehicle inspections, adoption of a uniform vehicle code, establishment of a state citizens' safety council, and reorganization of the court system.

TEXAS—Greater public awareness, more rigid enforcement and uniform driver licensing were the recommendations of Gov. Price Daniel's personal representative, Brad H. Smith, director, Governor's Highway Safety Commission.

The delegates, under the leadership of Morgan J. Davis, president, Humble Oil and Refining Co., named nine targets to hit in traffic accident prevention. Top of the list was public support followed by other legislation, education and enforcement measures.

WISCONSIN—Gov. Vernon Thomson, in a message delivered by his executive secretary, Phillip M. Sellinger, recommended expanding the driver education program, uniformity in dealing with traffic offenders, increasing state highway patrols and improving the accident record keeping system of the state.

Ed Johnson, executive director, League of Wisconsin Municipalities, said that cities need an effective means of coordinating various traffic safety activities. He recommended a coordinating committee in each community. He also said cities must improve training and selective enforcement techniques in traffic supervision.

Revise Driver Training Evaluation for Awards

Too many high school driver education courses are failing properly to lay the groundwork for a lifetime of driving, Thomas N. Boate, manager of the Accident Prevention Department, for the Association of Casualty and Surety Companies, declared.

After a decade of evaluating driver education programs in the nation, the Association announced that its evaluation procedure is being sharply revised to place more emphasis on the quality of instruction given than on the number of schools and students participating in the program.

Mr. Boate said that the Annual National High School Driver Education Award Program, established by the Association 10 years ago, has been successful in stimulating the expansion of driver education courses throughout the nation. However, the movement has shot up faster than adequate instruction could be provided, he said. As a result, a great number of courses are being conducted so as to impart only that skill and knowledge necessary to enable beginning drivers to pass a state drivers license examination. It is more important, he said, that proper driving attitudes be implanted in young drivers.

Mr. Boate pointed out that during the past decade 7,000,000 new drivers were enrolled in some type of driver education course but that 18,000,000 had received no formal training. He added that not all of those who were trained had received the benefit of courses meeting nationally recommended time allotment standards calling for at least 30 hours of classroom instruction and six hours of behind-the-wheel training.

Mr. Boate said that the award program will continue to report school and student participation in all types of driver education courses. However, for the purpose of determining awards, the program will from now on tabulate only the complete driver education courses offering a minimum of 30 hours of classroom instruction and six hours of behind-the-wheel training.

Moreover, award credit will not be granted unless the courses are taught by professional high school teachers

To Page 47

Parents ~~Want~~, demand
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- Graubard's Equipment is nationally known as the school safety patrol equipment "That Promotes Safety." It does this by fulfilling both of the conditions essential to a really effective Safety Patrol.
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THE SAFETY LIBRARY

By Ruth Parks, Librarian, NSC

Books, pamphlets, and articles of interest to safety men.

Accident Investigation

Justice in Accident Cases—A New Frontier of Science. Jonathan Karas. *Consumer Bulletin*, p. 24-26+, April, 1958.

Accidents

All Accidental Deaths and Motor-Vehicle Deaths, 1910 to 1957. Public Safety Memo No. 58, 2p., 1958 session. National Safety Council, 425 N. Michigan Ave., Chicago 11, Illinois.

Menace of the Automobile to the Life and Health of the U.S.A. Paul Dudley White. *Police*, p. 46-47, March-April, 1958. (A general summary of the problem.)

Automobiles Design

The Design of Motor Vehicles in Relation to Traffic Safety. Dr. A. Seyffardt. *International Road Safety and Traffic Review*, p. 27-31, Winter 1958.

Commercial Vehicles

Bus Facts, 26th edition, 52p. National Association of Motor Bus Operators, 839—17th St., N.W., Washington 6, D. C.

Controlled Access

How Access Control Affects Accident Experience. Charles W. Prisk. *Traffic Engineering*, p. 23-24, March, 1958. (Accident statistics support the safety of fully controlled access.)

Courts

Go to Traffic Court As a Visitor —Not as a Violator. American Bar Association, 1115 East 60th St., Chicago 37, Ill., in cooperation with the General Federation of Women's Clubs. 18p., 1957. (A program to improve traffic courts and promote traffic safety through groups and community cooperation.)

Drivers and Driving

Are You Fit to Drive? 15p., 1958. Committee on Medical Aspects of Automobile Injuries and Deaths, American Medical Association, 535 N. Dearborn, Chicago, Chicago 10, Illinois. (A booklet on physical and emotional fitness to drive.)

The Avalanche Is Coming. Forest R. Noffsinger. *Traffic Digest & Review*, p. 6-9, March, 1958. (The planning needs for more and more new drivers in licensing, training and enforcement.)

Driver Licenses

Driver Licensing—"1984 A.D." Glenn V. Carmichael. *Traffic Digest & Review*, p. 3-5, March, 1958.

Economics

Inflated Injury Claims Pose Money Wasting Problem. *Taxicab Industry & Auto Rental News*, p. 10-14+, March. 1958.

Enforcement

Prosecution of Traffic Violators Involved in Collision. Robert L. Donigan. *Traffic Digest & Review*, p. 12-16, March, 1958.

Highways

The New Federal-Aid Highway Program, 6p., 1957. President's Committee for Traffic Safety, 532 Pennsylvania Bldg., Washington 25, D. C. (Key facts in highways and safety.)

Some Guides in the Selection of Freeway Interchanges. Paul R. Tutt. *Traffic Engineering*, p. 11-14+, March, 1958. (Explanation and designs of various intersections to meet the needs of turns and traffic volume.)

Inventory

Traffic Inventory—A Framework of Action for Safe Cities, 5p., 1958. National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. (What it is, how it works, who participates.)

Yardstick for Street and Highway Traffic Management Programs, 12p., 1958. National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. (Explanation of the Annual Inventory of Traffic Safety Activities and reported performance of states and cities for 1956.)

One-Way Streets

Big Dividends from One-Way Street. W. H. Mann. *Traffic Engineering*, p. 39, March, 1958. (Diagram of changes and benefits in Nashville, Tenn.)

The One-Way Preference Street. A New Concept in Traffic Control. Creig Weingarten. *Traffic Engineering*, p. 21-22, March, 1958.

Parking

Longer Cars Affect Parking Meter Space. W. F. Hallstead. *Street Engineering*, p. 28, March, 1958. (Reports of consequences in a few cities.)

Police

Patrol for Traffic Law Enforcement. Traffic Law Enforcement Series. *Traffic Digest & Review*. p. 19-29, March, 1958.

Stopping and Approaching the Traffic Violator. Publication No. 2368, 10p., 1958. Traffic Institute, Northwestern University, 1804 Hinman Ave., Evanston, Ill. (This basic training manual is one of a series on traffic law enforcement.)

Psychology

Human Behavior and Traffic Accidents. Earl Allgaier. *International Road Safety and Traffic Review*, p. 19-26+, Winter 1958.

Radar

Radar Vehicle Detectors. Martin J. Reiner. *Municipal Signal Engineer*, p. 15-17, Jan.-Feb., 1958. (Description of detector, installation and operation.)

Research

Research Program Coordinates M.S.N. Staff Resources. *M.S.N. Center Letter*, p. 1-2, March, 1958. (Including brief information on some research projects.)

Signs and Signals

Case History—High Capacity Through Medians and Signals. A. L. Himelhoch. *Traffic Engineering*, p. 15-20+, March, 1958. (Facilitating

traffic movement during rush hours around Los Angeles International Airport, and the effect on accidents.)

Design and Application of Traffic Signal Lenses. J. Frank Williamson, Jr. *Municipal Signal Engineer,* p. 34-36, Jan.-Feb., 1958.

Downtown Signal System for a Medium-Sized City. R. T. Gregory. *Street Engineering,* p. 22-25, March, 1958.

Rough Seal Coat Used as "Rumbler" Stop Warning. *Street Engineering,* p. 12, March, 1958. (Installations in Chicago and Cook County, Ill. to reduce violations at stop signals.)

Street Lighting

New street lighting in the city of Coventry. Granville Berry. *International Road Safety and Traffic Review,* p. 15-18, Winter 1958.

Traffic

How to Crack the Traffic-Accident Barrier. Norman Damon. *Better Roads,* p. 40-44, March, 1958. (Through stronger support of the Action Program for traffic safety.)

Safety of Automobiles Increases as Engineering and Design Improve. *Highway Traffic,* p. 22-23, March, 1958.

Sharpening the Attack. A. R. Lauer. *Police,* p. 43-45, March-April, 1958. (Eight-point program for reducing traffic accidents.)

Addresses of Magazines Mentioned

Street Engineering, Gillette Publishing Co., 22 W. Maple St., Chicago 10, Ill.

Traffic Digest & Review, Northwestern University, Traffic Institute, 1804 Hinman Ave., Evanston, Ill.

Highway Traffic, 709-10-11 Republic Bldg., Louisville 2, Ky.

Consumer Bulletin, Consumers' Research, Inc., Washington, N. J.

Police, 301-327 E. Lawrence, Springfield, Ill.

Taxicab Industry and Auto Rental News, 200 W. 57th St., New York 19, N. Y.

Traffic Engineering, Institute of Traffic Engineers, 2029 K St., N.W. Washington 6, D. C.

Municipal Signal Engineer, International Municipal Signal Assn., 130 W. 42nd St., New York 36, N. Y.

M.S.N. Center Letter, Highway Traffic Safety Center, Michigan State University, East Lansing, Mich.

International Road Safety & Traffic Review, World Touring & Automobile Organization, 32 Chesham Place, London, S.W.1, England.

Better Roads, A. Perrin, Publisher, 173 W. Madison St., Chicago 2, Ill.

Circle Item No. 5—Reader Service Card

A BOOK THAT GIVES THE SPIRITUAL SIDE OF TRAFFIC SAFETY

by Dan Hollingsworth and Ona Belknap

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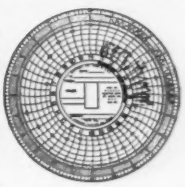
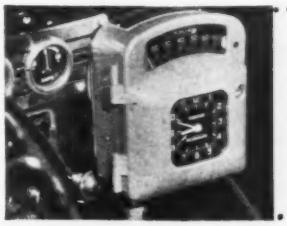


CHART TELLS ALL



Wagner Electric Corporation
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Circle Item No. 6—Reader Service Card

NEW... SAFETY EQUIPMENT

Publication of product announcements in this section should not be construed as endorsement or approval by the National Safety Council.

Flasher Warning Lights

Flasher lights are available in both Neon and transistor models. Both models have the operating mechanism sealed in plastic.

The lights are vaporproof, impact resistant and will operate with top efficiency in any extremes of climate. They are 100% safe to use in areas where explosive vapors are present.

Maximum visibility, reliability and economy of operation were the main objectives in their development. The Neon lights will operate up to three months, 24 hours a day, on a low cost battery. Transistorized models will operate around the clock for 30 to 60 days on two batteries.

The cast aluminum housing is rugged and the lenses are quadruple thick. A threaded steel insert in the housing permits easy attachment with a standard bolt to a stand or barricade.

Pacific Mercury, 14052 Burbank Blvd., Van Nuys, Calif. (Item 41)

Radio Traffic Control System

This system provides a compatible, flexible and reliable method of centrally coordinating and synchronizing traffic lights through utilization of the most recent advances in electronics.

By radio transmission of tones, the system controls standard local controller functions such as dial selection, offset selection, offset synchronization and any other special light conditions which the local controller is capable of instituting. The system works from a central programmer, which may vary from a simple clock-type device to a complex punched card or tape system. Information from the programmer is translated by a coder into tone codes which are then transmitted by standard radio equipment to FM receivers at each intersection. Here, a decoder re-translates the tones to initiate the desired program set up in the local controller.

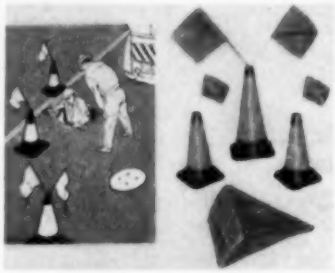
A central, expendable display panel shows the last transmitted "program" at each intersection and provides manual control of selected functions, if desired.

A completely flexible system, the equipment may be added to or modified by plug-in modular units as requirements dictate. The system is easily expanded to enable more than 1,000 group or intersection selections with up to 16 control function changes per intersection.

Constant system synchronization is insured by continuous transmission of a synchronizing signal to all intersection controllers in the system. Transmission of this synchronizing signal is independent of and does not interfere with function changes.

The radio equipment of the system is available in all licenseable frequency bands, including the 952-960 MC. band which the company recommends as the optimum choice for long range licensing stability in this type of application.

Motorola, Inc., Communications and Industrial Electronics Div., 4501 W. Augusta Blvd., Chicago 51, Ill. (Item 42)



Barricade and Truck Warning Flag

"Saflags" are made of 100% ingrain nylon material in neon red color and are fluorescent and iridescent. They are also included in a Barricade Safety Kit that consists of two 16″ x 16″ "Saflags" with diagonal stays to hold them open on ¾″ x 27″ staffs crisscrossed on a swivel base that mounts on a traffic cone; two 6″ x 7″ "Saflags" for use on 18″ cones; one 28″ trafficone cone; two 18″ cones; and a canvas carrying case.

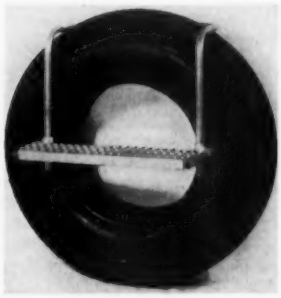
The flags were developed to provide day and night protection for men engaged in emergency roadside operations and for truck overhang warning.

A safety vest made of the same nylon fluorescent material is also available for men to wear while working under hazardous traffic conditions.

"Saflags" are designed for use by truck fleets, highway departments and road contractors, public utilities, etc.

Davis Emergency Equipment Co., Inc., 45 Halleck St., Newark, N. J. (Item 43)

For More Information—Circle Item on the Reader Service Postcard



Safety Mechanic Stand

This stand slips firmly over all sizes of truck tires. Safety grip tread provides an anti-skid surface for safe footing. The stand is fabricated from ¾" standard galvanized pipe to give years of rugged service in shops and on the road. The adjustable cross tees with sure locking set screws make it easy to adjust the stand for various heights.

The manufacturer claims that the Safety Mechanic Stand will increase a mechanic's efficiency by 60% while working on engine repairs.

Hudson T. Marsden Mfg. Co., Inc., 645 Beahan Rd., Rochester 11, N. Y. (Item 44)

Grade Crossing Lighting System

The railroad grade crossing illustrated here crosses Houston's Buffalo Speedway at the site of a new experimental lighting system. The system, designed to reduce the inherent hazard posed by grade crossings, consists of fluorescent luminaires mounted diagonally at the traffic artery-railroad intersection. The approach side of the luminaries' globes has been painted with yellow acrylic paint to indicate a danger area. The success of the unit has resulted in the Houston City Council authorizing the installation of experimental lighting systems at 14 other dangerous grade crossings.

General Electric Co., Schenectady 5, N. Y. (Item 45)

Plastic Highway Cones

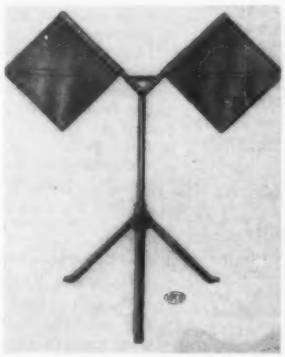
"Traf-Mark" cones provide safety for utility crews, protect newly painted traffic stripes and mark airport runways and temporary traffic lanes.

Molded from Pliovic polyvinyl chloride resins, the hollow cones are not affected by grease, tar or dirt and can be cleaned easily with solvents or detergents. They are lightweight, have no sharp edges and can be stacked for convenient storage.

The base is a sturdy, reinforced platform which keeps the cone upright despite accidental bumping. The tops of the cones are designed to accept an adapter for holding flags, signals or blinker lights. They can be lighted from within.

The two color cones are manufactured by a patented process utilizing both a red and yellow plastisol that imparts permanent color. Chipping and re-painting are eliminated. The cones are available in 14, 20½ and 28 inch sizes.

United Plastics & Development Co., Kent, Ohio (Item 46)



Tripod Flag Standard

This tripod is designed to display danger flags, when used on streets and highways, in and around industrial plants, building operations, emergency blockades, etc.

The tripod is made of T-iron and steel tubing and operates on a mechanically perfected roller bearing principle. The height in service is 55" but it folds to 30" for storage. The tripod weighs 9 pounds.

It is finished in bright yellow, baked-on enamel. The flags are 16" x 16" and made of 8-oz. red canvas.

Industrial Products Co., 2850 N. Fourth St., Philadelphia 33, Pa. (Item 47)

News Items

Cataphote Corporation

Benjamin A. Johnson

Benjamin A. Johnson has been appointed dealer service manager for this Jackson, Mississippi sign manufacturer.

For the past five years, Mr. Johnson has been assistant general manager of the International Amphitheatre of Chicago. His other business connections have been with the Illinois Central Railroad and the Construction Industry Manufacturers' Association. Mr. Johnson lives in Jackson, Miss.

Charles E. Searight, vice president of the Corporation, announced plans for expansion of manufacturing and office facilities at the Jackson location. Increased sales and the expansion of the new plastic division necessitated the enlargement of facilities.

SAFETY PRODUCT LITERATURE

Truck and Trailer Size and Weight Restrictions

The new 1958 pocket-size booklet compiling the laws of all 48 states and the District of Columbia regulating size and weight of trucks and trailers, has been prepared by the Research Department of the Four Wheel Drive Auto Company, Clintonville, Wis. A service of the Four Wheel Drive Auto Company to the trucking industry, the booklet has been prepared with the assistance of responsible state officials, who have checked and approved the regulations and interpretations relative to their individual states. Data presented in most cases is likely to hold until mid-1959. Four Wheel Drive Auto Company, Public Relations Department, Clintonville, Wisconsin.

For more details circle No. 81
on enclosed return postal card.

Generators and Flasher Lights

Pacific Mercury has just completed a 28-page catalog detailing specifications, service and maintenance data on the company's new line of generators and flasher lights. General models, including AC, DC and Diesel powered electric plants, occupy five sections of the catalog. Mercury is the first manufacturer to develop separate lines of electric plants to meet the specific needs of major users—public utilities companies, the construction industry, trailer and marine operators, fire departments, farmers and home owners. Information on how to select a generator for specific applications is included, along with accessory equipment for both generators and flasher lights. Pacific Mercury, 14052 Burbank Blvd., Van Nuys, Calif.

For more details circle No. 82
on enclosed return postal card.

Uniforms

A handy uniform guide showing the latest styles in uniforms has just been released by Special Order Uniform Manufacturing Co., P. O. Box 322, New Orleans 9, La. Catalog No. 558 illustrates cool, comfortable uniforms for summer wear for policemen, policewomen, firemen, school guards, special police, truck drivers, taxicab drivers, public utility workers, etc. The new guide features Bancroft Caps with 169 holes to the square inch—the holes are expresaly intended to give the wearer a cool head during hot weather. Shirts with "holes," are featured—these are especially designed of cool mesh for summer wear, in uniform styles featuring shoulder straps and badge tabs, in all uniform colors.

For more details circle No. 83
on enclosed return postal card.

Send for Sample Sign

Interested in really tough, trouble-free traffic signs for your community? The type that takes long years of punishment and still retains visibility and shape? Then investigate Syloy Signs. Send for your free, full-size testing sample, and for complete information, to the General Tire and Rubber Co., Reinforced Plastics Division, Marion, Ind.

For more details circle No. 84
on enclosed return postal card.

Heavy Duty Trucks

Ford has entered a new field in truck manufacture by adding a line fully competitive with the biggest gasoline-powered trucks made. The new line includes a wide selection of heavy duty tilt cab, conventional and tandem models, ranging from 25,000 to 50,000 pounds, G. V. W., and 50,000 to 75,000 pounds, GCW. The line features models that have up to 20 per cent greater payload capacity than the biggest trucks Ford made previously. Ford Division of Ford Motor Co., Smithfield Road at Rotunda Drive, P. O. Box 608, Dearborn, Mich.

For more details circle No. 85
on enclosed return postal card.

Automatic Control of Off-Street Parking

Various control plans for off-street parking lots are available from Western Industries, Inc., 2430 S. Ashland Ave., Chicago 8, Ill. For operations involving hourly rate and validation parking, there is "Parkontrol Time-Dater—Imprinter. Equipment: for lots operated on a flat fee basis, key, electro-card, coin and token operated gate.

For more details circle No. 86
on enclosed return postal card.

Hazard Warnings

Dependability, rugged construction and the assured visibility of Flasher Safety Lights and Barricades recommend them to any situation where hazard warnings are essential. Catalog LL-68-7 gives full description and specifications of these units. R. D. Fageal Co., Kent, Ohio.

For more details circle No. 87
on enclosed return postal card.

Traffic Line Markers

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Traffic Control Equipment

Auto flow fixed-face and adjustable traffic signals, downlight beacon, neon Wait-Walk Signals, pulsating red and model 102 controls are the main subjects of Bulletin 5603, a guide to the traffic control equipment available from Southern Signals, Inc., P. O. Box 1303, Shreveport, La.

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Catalog No. C-414 covers Lee's complete line of truck tires for on-and-off highway use. Included in the 16 page booklet are facts about job payload performance. Lee Rubber and Tire Corp., Conchocken, Pa.

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Bulletin EOR-547-A introduces the new G-E line of transistor-powered two-way mobile radios. Designed for 12-volt systems and operative with either positive or negative ground (an important consideration in fleet operations), these transistorized power supplies operate on all communications bands. General Electric Co., Communications Products Dept., Section

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From Page 41

who have successfully completed a state-approved driver education teacher preparation course.

Beginning with the present school year, an Achievement Award will be granted to states which have provided standard courses in at least 60 per cent of public high schools and which have enrolled at least 50 per cent of the annual group of new drivers. Progress Awards will be granted to states reporting an outstanding annual expansion of school and student participation in high-quality courses. Achievement and progress made by private and parochial schools in a state will be recognized by similar awards based on the same criteria.

Last year 25 states qualified for some kind of award in the national program. Mr. Boate said that on the basis of existing programs, only two or three states would at present be eligible for achievement awards under the new system of evaluation.

Honor Public Information Media for Safety Service

The National Safety Council has announced recipients of its 1957 Public Interest Award.

The noncompetitive award is made annually to public information media for exceptional service to safety.

The 1957 award went to 40 daily and 18 weekly newspapers, 147 radio and 36 television stations, one television and two radio networks, four radio-TV syndicates, 10 general circulation and 29 specialized magazines, 29 advertisers and 57 outdoor advertising companies.

"A review of these 1957 Public Interest Award entries," said Ned H. Dearborn, Council president, "shows beyond question the tremendous contribution of mass communication media to the sharp reduction in the number of traffic deaths last year. We are proud to honor the outstanding leadership represented by these awards."

Judges of the award were Hugh Curtis, editor, *Better Homes & Gardens;* Norman Damon, vice president, Automotive Safety Foundation; Maxwell Fox, of the Advertising Council; Frederick H. Garrigus, manager of organizational services, National Association of Broadcasters; Wesley I. Nunn, advertising manager, Standard Oil Co. (Ind.); Dr. Kenneth E. Olson, Medill School of Journalism, Northwestern University, and John Osbon, Midwest news editor, Broadcasting magazine.

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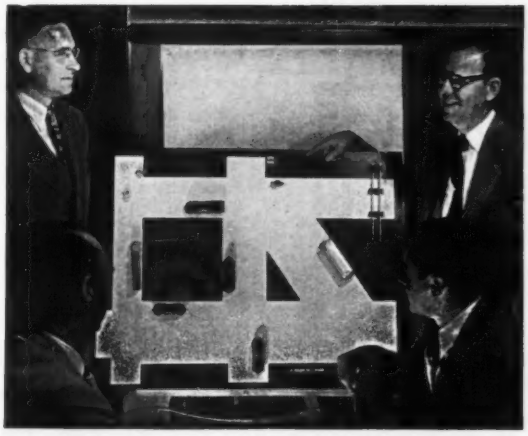

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Filmstrip Aids Drivers In Spotting Hazards

A filmstrip to help improve drivers' perceptive abilities has been prepared by New York University's Center for Safety Education in cooperation with Shell Oil Company.

The filmstrip, "Perception of Driving Hazards," consists of 30 color photographs of traffic hazards that lead to accidents, as seen from the driver's viewpoint. These photographs were shot under actual traffic conditions.

When the filmstrip is used in driver training, each situation is flashed on a screen for a few seconds. The viewer must spot the hazards and then explain how he would avoid becoming involved in an accident.

A guide book is available for use with each print of the filmstrip.

Dr. Leon Brody, the Center's director of research and publications, said the film can be used in high school driver training courses, corrective driving clinics and at safety meetings of clubs and organizations.

Development of the filmstrip is part of the driver research program launched by the center to find what personal traits lead to auto accidents and to develop better tests for driver licensing and improved educational programs. The driver research project has been made possible by a three-year research grant to the Center by Shell.

The filmstrip and guide book can be obtained free of charge by writing: Center for Safety Education, New York University, New York 3, New York, or Public Relations Department, Shell Oil Company, 50 West 50th Street, New York 20, New York.

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MEMORIAL FUND ESTABLISHED FOR THOMAS H. MacDONALD

A campaign is underway to raise one million dollars for a permanent memorial to the late Thomas H. MacDonald, for 34 years the nation's top highway administrator.

The Thomas H. MacDonald Memorial Fund committee said the money will be used to establish a chair of transportation at Texas A. & M. College.

After his retirement as U. S. Commissioner of Public Roads in 1953, Mr. MacDonald, began a transportation research program at the Texas institution which will be continued as a memorial to him.

He served the Federal Government under seven Presidents and 17 Congresses. He retired in 1953 as commissioner of the U. S. Bureau of Public Roads.

He is generally regarded as the man who contributed more than any other to bringing the nation out of the mud.

Sponsors of the fund include leading federal and state officials and engineers, members of Congress, industrialists and others. The organizing committee is headed by Pyke Johnson, former president and now consultant to the Automotive Safety Foundation.

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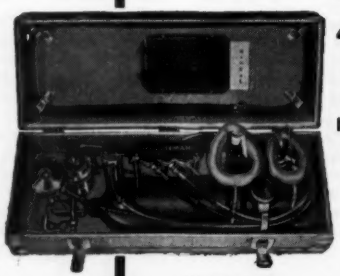

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Traffic Safety

FORMERLY PUBLIC SAFETY

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RESEARCH REVIEW

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The RESEARCH REVIEW is a quarterly supplement published by TRAFFIC SAFETY for the reporting of research that relates to traffic safety. This service is designed to provide those who conduct research, and/or utilize research findings, information that contributes to, advances, or clarifies the body of traffic safety knowledge. The value of research and the prevention of duplication and overlap is enhanced by prompt reporting. To fulfill this purpose, the RESEARCH REVIEW will present completed reports, abstracts, summaries of research in progress, and information regarding contemplated research.

The opinions expressed and conclusions drawn are entirely those of the various authors of these papers. TRAFFIC SAFETY and the National Safety Council accept no responsibility for them, and publication should not be deemed as either endorsement or approval of the ideas expressed or devices described.

Manuscripts appropriate for publication should be submitted to the Research Division of the National Safety Council, 425 North Michigan Ave., Chicago 11. Manscripts cannot be returned unless accompanied by a self-addressed, stamped envelope. Editorial handling will be easier if manuscripts are typed, double-spaced in triplicate, and accompanied by an abstract of 200 words or less and all original art work. Any other information regarding research in progress or contemplated research can be submitted in any form that outlines the full particulars, i.e., investigator, problem, hypotheses, methodology, desired or expected outcomes, etc.

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President's Committee for Traffic Safety

Special Report on the Williamsburg Conference

DURING the week of February 23-28, 1958 a unique conference of outstanding scientists, representing a number of disciplines, and a staff of professional traffic safety experts met in Williamsburg, Virginia, for the purpose of developing fresh approaches to the problems of traffic safety research. The conference was sponsored by the President's Committee for Traffic Safety, and it was financed under grants from the National Institute of Mental Health, Bureau of Public Roads, Alfred P. Sloan Foundation, and Automotive Safety Foundation.

Attending and participating members are listed below:

Discussion Leader: Dr. David C. Ralph, Head, Rhetoric & Public Address Area, College of Communication Arts, Michigan State U.

Conferees

Dr. Frederick H. Arterton, Washington Cathedral, theologian.

Dr. Carleton B. Chapman, U. of Texas Medical School, biological scientist.

Dr. James C. Charlesworth, Amer. Academy of Political & Social Science, public administrator.

Dr. Donald L. Foley, Dept. of City & Regional Planning, U. of California, city planner.

Dean Harold B. Gotaas, The Technological Institute, Northwestern U., engineer.

Dr. E. Lowell Kelly, Dept. of Psychology, U. of Michigan, psychologist.

Dr. John L. Kennedy, Dept. of Psychology, Princeton U., psychologist.

Dr. Earl L. Koos, School of Social Welfare, Florida State U., sociologist.

Eric Larrabee, Harper Brothers, editor.

Dr. Harold D. Lasswell, Professor of Law & Political Science, Yale Law School, political scientist.

Dr. James L. Malfetti, Safety Education Institute, Teachers College, Columbia U., educator.

Dr. Philip M. Morse, Dept. of Physics, Mass. Institute of Technology, physicist, operations research.

Dr. Benjamin D. Paul, School of Public Health, Harvard U., anthropologist.

Dr. Anatol Rapoport, Mental Health Research Institute, U. of Michigan, mathematical biologist.

Dr. Harold Rashkis, Eastern Pennsylvania Psychiatric Institute, psychiatrist.

Dr. Ralph Roberts, Office of Naval Research, chemist.

Charles M. Tiebout, Dept. of Economics, Northwestern U., economist.

Dr. George Ulett, Dept. of Psychiatry, Washington U. Medical School, psychiatrist.

Dr. Stefan Valavanis, Dept. of Economics, Harvard U., mathematical economist.

Dr. Max A. Woodbury, Professor of Mathematics, New York U., mathematician.

Consultants and Staff

Stanley A. Abercrombie, Assistant Secretary, Nat'l Comm. on Safety Education, education.

Anthony Anthony, Laws Division, Automotive Safety Foundation, legal.

J. Stannard Baker, Director, Research & Development, Traffic Institute, Northwestern U., enforcement.

Dr. Joseph M. Bobbitt, Assistant Director, Nat'l Institute of Mental Health, psychology.

Dr. Theodore W. Forbes, Assistant Director for Research, Highway Traffic Safety Center, Michigan State U., research.

Dr. James L. Goddard, Chief, Accident Prevention Program, U. S. Public Health Service, medicine.

Dr. Herbert H. Jacobs, Vice President, Dunlap & Associates, Inc., mathematics.

William G. Johnson, General Manager, NSC, public education.

Professor J. H. Mathewson, Assistant Director, Institute of Transportation & Traffic Engrg., U. of California, research.

Charles W. Prisk, Director, Highway Safety Study, U. S. Bureau of Public Roads, engineering.

W. F. Sherman, Manager, Engrg. & Technical Dept., Automobile Manufacturers Assn., vehicle design.

J. Wm. Bethea, Exec. Secy., President's Committee for Traffic Safety.

Dr. Leon Brody, Secy., Research Comm., Advisory Council to the President's Committee, Center for Safety Educ., New York U.

Norman Damon, Vice President, Automotive Safety Foundation.

John J. Flaherty, Director, Research Division, NSC.

Dr. Bernard H. Fox, Psychologist, Accident Prevention Program, U. S. Public Health Service.

James F. Kenney, Treasurer, Alfred P. Sloan Foundation, Inc.

Merwyn Kraft, Chairman, Research Committee, Advisory Council to the President's Committee, Research Coordinator, Flight Safety Foundation.

The titles of the opening addresses and the name of the staff members who presented these addresses are listed below:

The Traffic Situation, W. G. Johnson, General Manager, NSC.

Enforcement, J. Stannard Baker, Director of Research & Development, Traffic Institute, Northwestern U.

Engineering, Charles W. Prisk, Director, Highway Safety Study, U. S. Bureau of Public Roads.

Education, Stanley A. Abercrombie, Assistant Secy., Nat'l Commission on Safety Educ., Nat'l Educ. Assn.

Conference Objectives, Dr. Joseph N. Bobbitt, Assistant Director, National Institute of Mental Health.

After the completion of the orientation period, the conferees met in plenary and subgroup sessions for the remainder of the week. The summary report of the conference as presented by the subgroup chairmen is as follows:

Conference Report

Background. The conference was convened "to generate new ideas for traffic-safety research, particularly in the field of human behavior." The need for research on traffic safety springs from the serious and complex nature of the problem and from the inadequacy of existing knowledge. Despite the extensive work already done by individuals and organizations, the current supply of scientific findings is insufficient to provide a firm basis for public policy. The problem of traffic safety, like other important public health problems, demands large-scale support from private and public sources.

Research Strategies. Encouragement should be given to basic as well as applied research. From advances that have occurred in the solution of other problems (in the fields of health and industry, for example) we are convinced that more effort must be devoted to basic or fundamental research.

The phenomenon of highway accidents cannot be fully understood without considering it in the context of routine traffic behavior; hence research must include the study of normal as well as abnormal patterns of behavior.

The nature of the problem makes it necessary that research be conducted both in suitable laboratory situations and in selected field situations (e.g., communities, sociocultural groups and other population segments). In many instances field research can be effective only with the cooperation of civil authorities and informal leaders.

The promotion and support of research should be such that findings of the several appropriate research disciplines may be available for integration and application to the problem at hand.

Research efforts both by groups and by individual workers should be encouraged. For best results, research should be supported on the long-range program basis as well as on a short-term project basis.

To the extent possible, research should be conducted by organizations with a maximum of research talents and a minimum of inappropriate pressures.

* * *

For operating purposes the conferees divided themselves into three groups concerned respectively with the following topics:

1. A systems approach to traffic flow and driver behavior.
2. The psychology of driver behavior.
3. The social context of the automobile, its use and regulation.

It is recognized that the divisions are somewhat arbitrary and not necessarily exclusive. Reports of the three divisions are first presented in summary form; amplification appears in appendices.

I. A Systems Approach to Traffic Flow and Driver Behavior

A vigorous research effort aimed at measuring actual traffic dynamics and actual driver-car behavior in various traffic situations is required in order more clearly to delineate dangerous situations and to indicate ways whereby new road and automobile design and modified traffic rules can increase traffic flow and reduce traffic hazard. This research effort should include at least four coordinated activities:

1. Recording and analysis of the actual flow of traffic in various localities at various times and conditions of stress;
2. Using the parameters of traffic dynamics obtained from (1), simulating traffic flow by digital computing equipment so that special situations can be studied in detail and the effects of experimental modifications can be measured quickly and safely;
3. Equipment of special cars to observe the behavior of the individual driver in relation to his traffic environment as he drives along, to supplement the mass observations of (1);
4. Development of equipment to simulate the traffic environment of the driver, to supplement the observations of (3) and to extend them into situations of stress which might involve danger of accidents. Such a driver-environment simulator might also be of use in determining the efficiency of training or testing programs and in determining the effects of alcohol, fatigue, and other factors on driver behavior, though correlation with the results of (1) and (3) would be required to insure realism of the findings.

The quantitative analysis involved in the program just described presupposes a proper selection of a great number of statistical indices. However, what these are can be decided only as the program develops. Therefore, the program needs to be supplemented by a methodical development of proper statistical techniques. The development of such techniques involves an additional dimension of statistical research; what amounts to a demography or an epidemiology of traffic behavior. This should be carefully coordinated with a continuing, nationwide, standardized, statistical reporting system (corresponding to vital statistics, etc.).

More detailed suggestions as to procedures and minimum specifications for each of these programs is included in Appendix I.

II. The Psychology of Driver Behavior

Driver behavior as a system can be described as being composed of three elements: input, organization and output. These need not be investigated separately, but are so considered here for convenience.

Input is of external and of internal origin, arising in the external environment or from within the organism. The input is integrated and made meaningful by the organization factor, which selects that which will become output from available motor skills.

The input for driver behavior requires intensive investigation. We need to know what constitutes effective input and the variance of its effect on output in the widest possible sampling of drivers.

The organization factor may be considered on two levels. The first is more conceptual or symbolic, requiring higher integrative processes, with a high degree of driver awareness. The second level is more automatic, requiring less awareness.

We need to know how the level of less awareness may be utilized to replace the probably highly variable activity of the level of greater awareness, and under what conditions. How may "big brother" controls substitute even for the more automatic driver behaviors?

It is of special importance that the entire area dealing with attention be investigated, with particular reference to different driving conditions, and in a wide sample of drivers.

Motivational systems account in large measure for the functioning of the organization factor. What are these systems? How do they develop? How may they be utilized in teaching safe driving? How are they influenced by educational measures and by social pressures, especially by the peer group? What is the role of anxiety, and how does it relate to enforcement on the one hand and good driving on the other?

What constitutes effective rewards and punishments in the development of driving skills? How may these be incorporated into an educational program which has as its end point training for effective and safe driving under *all* road conditions?

Output, especially conceived as overt driver behavior, requires objective measurement. For this, instrumentation as well as subjects are necessary. A driver simulator is essential but is not the only device or technique to be used.

Research must not be limited to the driver; the passenger and the pedestrian require the same intensive study.

An elaboration of these descriptions and suggestions can be found in Appendix II.

III. The Social Context of the Automobile Its Use and Regulation

In planning research, the problem of auto accidents can profitably be viewed from various perspectives or frames of reference, including:

a. The *place of the automobile* in American life and in the different subcultures that make up America: the ways in which the use and meaning of the automobile are related to other aspects of our total pattern of life—historical, political, legal, economic, recreational, technological, familial, etc.

b. Highway driving viewed as a *social activity* or dynamic social game involving the role of the driver as affected by his perception of, and interaction with, persons playing other roles on the highway scene (passengers, other drivers, pedestrians, law officers, etc.) and requiring conformity to a socially defined set of rules whose violation constitutes anti-social behavior.

c. Use of the automobile considered as an *economic activity*. So considered, automobile traffic involves choosing between benefits and costs (including indirect and non-monetary benefits and costs) and how they should be allocated and who is to bear their burden. An automobile trip by its very logic tends to differ from an ordinary economic good in several respects—e.g., there are numerous external economies and diseconomies; consumer preferences interact; there is uncertainty, risk, and misperception of risk; there are other kinds of consumer ignorance; there are social overhead costs. The usual market mechanism fails in this area to allocate the burden and to encourage the economizing of human life, time and money. Research should aim at specifying an "ideal solution" and, once this is done, uncover the most profitable next steps public and private policy must take. The problem of the economies of traffic safety is akin to the economies of public health and public goods in general; for instance, schools, courts, defense, etc.

These lines of research are suggested:

a. The development of more valid and reliable measures of traffic safety than are now available, to serve as criteria needed in subsequent research.

b. Analysis of the relationship between serviceable indices and meaningful subdivisions of the entire population (e.g., divisions by social class, age group, educational status, kind of driver training, etc.) so as to generate new hypotheses for explaining highway accidents and for attempting corrective actions.

c. Testing promising hypotheses, techniques and devices—e.g., varying kinds of penalties, different balancing of punishments and rewards, different types and courses of driver education, varying intensities of enforcement, devices for reducing driver anonymity or increasing communication to and between drivers, etc.

d. Systematic examination of the combinations of factors associated with the acceptance and the non-acceptance of effective safety measures by organizations, communities and groups.

e. Study of the possibilities and consequences of modifying the traditional allocation of responsibility for traffic regulation and safety activities among governmental and other agencies.

Appendix I: AMPLIFICATION OF SECTION ON "A SYSTEMS APPROACH TO TRAFFIC FLOW AND DRIVER BEHAVIOR"

1. Observation of Mass Traffic Flow—The position, velocity and acceleration of a car should be measured over about 1000 foot stretches of road, in relation to the relative position, velocity and acceleration of the neighboring cars. A camera or cameras, placed about 100-200 feet above the road, with photos taken about every second, could produce the required accuracy (about 2 feet in position). Long sequences of such shots should be taken at different locations and under different conditions of traffic stress (day, night, dry, wet, presence of police, etc.) The pictures can be projected and the vehicle positions transcribed by "assembly line" methods to punched cards or tape, so that high-speed computers can calculate the changes in velocity and direction of each car as a function of the relative positions, velocities and accelerations of the neighboring cars and of the road conditions. From these computations the probability distributions of car-driver reactions can be tabulated, for analyses in respect to the effects of car and road design—and also as required input for the traffic flow simulation of item 2. On the basis of first observations experiments can be devised to clarify various unclear points.

2. Simulation of Mass Traffic Flow—Using the dynamic parameters of driver-car behavior, a large digital computer can be programmed to simulate traffic flow, to compute positions and velocities of a population of cars on a stretch of road, a sequence of intersections or any other portion of a road network. The variability of car-driver behavior can be included and the density and speed of input can be varied to simulate various conditions of stress. Total flow can be calculated and the nature and number of accidents and near-accidents can be recorded. After the situations observed in (1) are duplicated, to check the realism of the simulation, many simulated experiments can be performed. The frequency of near-accidents and accidents can be measured as traffic stress, of various sorts, is increased, the effect of more strict enforcement of traffic rules could be tested and many other things could be tried out quickly and safely.

3. Observation of Driver Behavior—To complement the measurements of gross behavior of car-driver described in (1) detailed recordings of individual driver reaction to traffic environment should be made. To do this a specially instrumented car or cars must be used which can be driven through various traffic situations, recording what goes on around the car and what corresponding reactions of the driver occur. One possible method of implementing such a program would be an all-round-looking camera which would photograph the car's environment in a circular strip along which absolute direction could be recorded. In the circle within this strip, the film could record time, brake and accelerator position, steering wheel position, car acceleration and any other appropriate phenomenon. Here again photographs could be taken about once a second and the layout should be designed for easy (or perhaps semi-automatic) transcription to digital computer input. Possible results of these measurements could be more detailed knowledge of car-driver reactions to traffic environment, to supplement (1) and required by (2). Other results

would be possible greater insight as to possible changes in car and road design to improve these reaction behaviors. Analysis of these observations will be of help in designing and using the driver-environment simulator of (4).

4. Driver Environment Simulation—A number of complex problems, such as piloting aircraft, have been studied by the development and use of devices that *stimulate* dangerous or difficult-to-observe environments. These devices depend on the fact that humans "fill in" much of the detail of the visual field, for example, just how much "realism" is needed to obtain realistic behavior in the stimulation is not known, but the problem can be solved (expensively!) by preliminary experimentation.

The minimum requirement for such a stimulation would be an automobile body with seats, instrument panel and controls such that a subject could enter the automobile, start the car, pull away from the parked position into a stream of traffic and drive for "x" hours seeing and hearing stimuli that behave as if they came from the real environment. The simulator must react appropriately to every action initiated by the subject. In particular, he must be able to have "accidents" in the simulator.

It should be emphasized that we are proposing a kind of simulation here that has not been attempted previously because of its complexity and cost. For example, each "vehicle" in the field of view must react appropriately to an action on the part of the driver. It is impossible to program such appropriate reaction into a computer—one must contemplate using a staff of human "stooges" to apply predetermined strategies (which may be quite complex), rather than predetermined responses.

If it were possible to build and finance the operation of such a large-scale simulation device, what would it be used for? It seems to us that such a large driving laboratory might be used first of all to study in a quantitative way what drivers actually do in a variety of normal driving and stressful driving situations. It should help to answer the question as to which of the many aspects of real driver behavior that might be measured is it profitable to try to measure. In addition, the simulator would make possible studies of the effects of drugs, fatigue, motivation, rest pauses, etc. on driver performances.

The problem of cost should be one of the first considerations in contemplating this proposal. Simulation research, particularly where large numbers of people are involved, is an expensive undertaking.

Statistical and Methodological Problems—The available statistics on accidents presuppose several systems of "taxonomy." For example, the 12 types of accidents now used in standard reports presuppose a classification into non-collision and collision and further sub-classification of these largely according to types of obstruction (if any) encountered. On the other hand, some researchers have proposed alternative classifications. For example, one is based on failures to follow a prescribed path and on deviations of the relative direction and velocity of the car (a quantitative vector variable). Still another classification emphasizes type of road, departing from previous conventional classification into rural and urban (which has lost much of its meaning) and arriving at more relevant classification of thoroughfare types.

Many other taxonomies exist, which, it is supposed, are suited to the various purposes for which they have been designed. Clearly, of the first problems in basic research on the general aspects of traffic behavior is to design a taxonomy particularly suited to the types of problems to be considered. This should be done with reference both to types of accidents and to various indices of severity, and any other quantitative measures from which guidance may be obtained toward an understanding of general traffic properties.

There is a serious and relevant problem to be decided in that little is yet known as to whether the individuals who have one or more accidents of a given severity differ essentially from those who do not. To say it in another way, is the accident rate this year higher for the sub-group of persons who had an accident last year than for the subgroup of those who did not? If it is higher, by how much and for what causes?

If the rate of repetition for accidents is higher than the accident rate, but not by much, the problem of identifying the accident-prone driver from his accident record is very nearly as hard as identifying him before he has had an accident. Barring all drivers who have had more than a critical number of accidents will in that case not appreciably reduce the overall rate in the future. In fact it is quite probable that almost all accidents involve normal individuals (i.e., those whose "accident-proneness" [in accidents to be expected per mile] differ at most by a few percent from the average).

The suggestion arising from the analysis underlying this discussion is that sophisticated mathematical and statistical analysis is required to determine the extent of "accident-proneness" in the driver population. The difficulty of determining accident-proneness in the individual is extreme because of the fact that accidents are such rare events.

Summary—The goal of the research program outlined here is envisaged as primarily development of quantitative indices of road behavior which may be considered "normal" within specified conditions. Actual road behavior of different individuals or of an individual over a period of time will exhibit distributions of these indices which, on occasions will pass outside of the "normal range." Whenever this happens in conjunction with a concatenation of certain environmental conditions, a "near-accident" of various degrees of approximation will occur, which in the extreme case will become an accident of a given severity. Since near-accidents occur with a frequency exceeding by several orders of magnitude the frequency of actual accidents, the focusing of research on these situations should alleviate the difficulties associated with the statistical study of rare events.

It seems desirable to have a quantitative study of a continuum ranging from safe to disastrous patterns of behavior in which observational and experimental findings would be given an appropriate theoretical base.

Appendix II: AMPLIFICATION OF SECTION OF "THE PSYCHOLOGY OF DRIVER BEHAVIOR"

Driver behavior can be described as the result of three elements: input, organization, and output, to be defined and discussed below. It should be emphasized that studies of the three cannot be separated arbitrarily, but are being mentioned individually for the sake of convenience.

A. Input—Input is both external and internal.

1. External input refers to sources of stimuli outside of the person in the immediate time environment of the driving situation. Research in this area may be concerned with questions such as the following: What are the perceptual configurations which make up the driver's external input? Particularly, how are inputs which signal actual or potential danger perceived? What are the variations in perception of the same stimulus pattern which can be found among different drivers? Many hypotheses can be generated from knowledge of perceptual variation. For example, we may hypothesize that the number of perceived crises varies directly with the amount perceived and its meaningfulness. Similarly, it is interesting to speculate how the number of actual crises is related to the number of perceived crises. We can even hypothesize, more broadly, that there exists an optimal perception level. In any event, the overall question is to establish the relationships between perception and the criteria of good driving. This implies, among things, the introduction of different ways of observing—either experimentally or by selection from a population. In sum, we need research into techniques of measurement and description of external input. This should include correlations with physiological measures (EEG, polygraph, etc.), gross behavioral measure, measures of objective relations among input elements, etc.

2. Internal input—Internal input refers to all information arising from the person. This includes that which comes from the body as well as present psychic states which may have arisen from past experience. We need research into techniques of description and measurement of internal driver input; for example, set, perceptual tendencies, present habits of perceiving, visceral sensations, drowsiness, etc.

B. Organization Factor—The organization factor is the integrator of these inputs. It may be regarded here as including habit systems.

1. Levels of the organizing process and their modification—There are two levels of organizing processes. The first is on the conceptual or symbolic level, requiring attention, highly integrating, and requiring *much* awareness. There is generally a progress during the learning of driving, from the first to the second, i.e., from more to less awareness, for any set of acts. Furthermore, the degree of automaticity finally achieved for various sets of acts varies in a driver from set to set and varies from driver to driver. We would like to define various conditions leading to different degrees of automaticity. This definition should come from research. Therefore, research into judgment or decision making behavior is very important. It can guide research on automatic controls which will substitute adequately for the driver's failure.

For example, it might be possible to develop more "big brother" controls than we now have in order to make certain processes of the complex type less complex where they are dangerous, and process of the more automatic type less dangerous.

A "big brother" control might be one such as the automatic signal telling of speed beyond a present level, or a gong, on an express highway where it is dangerous to stop, telling of impending gasoline shortage, or radar control warning of a vehicle too close in front.

We would like to carry out studies on the distribution and loss of attention under various driving conditions. Because it is well known that attention cannot be continuous for a demanding task, it may be that certain types of people, certain types of traffic conditions, certain conditions of the individual, certain habits of behavior, lead to different degrees and numbers of attention lapses. We would like research evidence on these matters.

The task of formal driver education is to teach the predriver how to operate efficiently at both levels of complexity of organizing process. The driver training teacher is concerned with initial learning functions, and not with review learning functions of experienced drivers. There is some evidence that training of fleet drivers may improve their accident experience. Can this question be answered more definitely? Can the ordinary driver's accident experience be improved by review training? How long will such training be effective?

What would be the effectiveness of advanced driving schools where a man could get a certificate or badge or special license plate? This might be an incentive to reach and an incentive to keep. Since most people think they are good drivers, this may be a means of showing them that there are different levels of driving excellence and that what they considered good driving might in fact be dangerous driving indeed. Certainly the effectiveness of the existing British organization of this type should be measured.

The general problem of driver education is receiving some attention, but should probably be examined with much greater care, in an attempt to find out something of the effect of all the various elements of training programs. This means, that evaluation research is of great importance not only as to individual curriculum components, but also as to their distribution in the training courses. Special attention should be paid to training in emergency measures and to attitudes toward the goals of driving.

2. Motivation and its modification—The motivation systems in driving seem to be multiple. We would like to know what these systems are. We would like to select reinforcements for driving so that rewards for the acts in driving are more compatible with certain motivational systems than with others. For example, how is the efficiency of automatic behavior—or for that matter, behavior of any degrees of complexity—affected by changes in anxiety? By others? By one's family? For example, after two moving traffic violations, what kind of behavior characterized the driver if he is threatened by imminent loss of license? This can be related on a theoretical level to the effects of

differences of punishment gradient. What is the relative effectiveness of differences of suspension of license as contrasted with fines?

In practice, good driving habits may be rewarded or actually punished; likewise, bad driving habits may be punished or actually rewarded. We need to study the kinds of reinforcements that exist. We need to study the effects of changing these. For example, an experimental estimate can be made of how satisfying certain behaviors are. How will satisfactions fare when placed in competition with certain punishing factors? Here we can profitably investigate the motivational value of certain risks vs. certain punishments. This is an especially fertile field for investigation because some evidence suggests that while knowledge of increased risk does not effect behavior, other knowledge does. We want to know how much information drivers have about driving risks, and what would happen if they had more information.

All of the above—indeed all motivational studies—must be carried out against the background of early learning and reinforcement of various attitudes toward society, morality, one's peers, etc.

How do all these attitudes develop?

In this connection, it would be very appropriate to study the development of ethical understanding and behavior, feelings of responsibility toward society, toward the family, and in a grimly logical way, toward the entity such as a peer group whose ethics demand that the outgroup regards as unethical? How ethical is it to reward someone for doing what he should do anyhow? How can feelings of responsibility in other spheres be channeled to act just as strongly in the person's relations with other drivers?

In all of these areas of investigation, it will be necessary to select certain subjects as samples of the population as a whole. The sample must include members of various sociocultural groups and subgroups, males and females, different age groups, etc., as well as drivers of different abilities and experience. It is important that drivers who have participated in accidents of specified degrees of severity be available to aid us in finding out what actually happened in these accidents.

It has been asked what might happen to the aggressiveness or other anti-social impulses assumed to be involved in some accident-producing behavior if this outlet were no longer available. Might this not be like a conversion symptom, such as hysterical paralysis of the leg? If modified by some peripheral means, this might be the case; however, if modification were made in basic attitudes, might not the corrective effect be more complete and permanent? This must be investigated; if morality is not instilled in early life, if the bases for responsible behavior are not early established, may it not be too late by the time driver age is reached?

Perhaps a searching investigation must be made of the values of American civilization and of our attitudes toward the automobile as a public institution, perhaps even longitudinal study of this concept. If it is important enough as an influence, it may be time to examine the whole structure of the value systems of the country. The next generation is the one which our educations will influence.

It was brought out previously that there exist motivational systems at various levels and of different kinds. It would be well to relate the different kinds of motivational systems in our drivers. These problems can be attacked experimentally, either in live car situations or in a simulator.

Parenthetically, the amount of profitable research which can be done in a simulator is so great that it would not be amiss to recommend expansion of the program of producing a simulator once the prototype has been developed successfully.

One interesting attitudinal question relates to the popular concept that accidents are inevitable. Means should be examined to discover the possible existence of such attitudes and of means of changing them if they exist.

C. Output—Output includes all the behavior of the individual as a result of initial input, feedback from other behavior, and intermediate organization. We cannot divorce the relationship of output and organization, since different outputs will result from alternative decision-making processes of organization.

We would first like to describe the most efficient motor behavior of the human in general terms, to which questions of automobile behavior can be referred for comparison. For example, the push-pull steering of the Cornell-Liberty car is more compatible with movement actuated by muscles capable of fine control than is the conventional steering wheel, all other things being equal.

Motor behavior can be measured by instruments now available, and some attempts have been made. But the full potential of the methods available to us has not been exercised, principally because of lack of funds. Research in terms of motor analysis is of importance.

D. Research on persons other than the driver—In the areas of attitude, enforcement, motivation, perception, and training, the pedestrian is as fit, and perhaps a fitter, subject for study than the driver.

Personal Comments by Members of Group 3

As a basis for preparing the section on "The Social Context of the Automobile, Its Use and Regulation" which appears as Section III of the "Conference Report," each member of this group agreed to prepare a brief statement. This was to capture some ideas which the group recognized were sufficiently heterogeneous to make it difficult to incorporate them faithfully into any single document. It should be emphasized that, as personal comments, these do not necessarily carry the weight of combined group reports. Written under pressure of time, they reflect rough ideas, not final proposals.

The individual comments follow.

* * *

D. L. Foley:

1. *The social roles of the motor vehicle driver.* Research to focus on the behavior and/or attitudes of the driver as these are influenced by or related to the social roles in which the driver is placed. By "social role" we

mean the position of the driver and the corresponding behavioral expectations associated with that position as this position relates to the positions held by other actors—including other drivers (and their vehicles), passengers, pedestrians, traffic enforcement officers, etc. Mainly this research would seek to identify the multiple roles of the driver, the degree to which these roles are compatible or in conflict, and the ways in which the driver's role situation relates to his driving behavior. Initially, it might be best to seek an essentially qualitative classification of roles and of driving behavior. Methods of research: observation, interviewing, use of situational questions, etc.

2. *The sociology of the automobile.* Research on the place of the automobile in American life, on the institutional patterns and social controls that have grown up around it, and on the ways in which the ownership of and the dependence upon the automobile have become interrelated with other features of our pattern of life.

3. *The societal framework of automotive safety activity.* Research that will seek (a) better to understand the relative place of units of the automobile industry, various levels and agencies of government, and civic, nonprofit or other agencies by which auto and traffic safety features and/or programs are researched, recommended, put into effect, and, as necessary, enforced; and (b) analytically to explore the relative advantages and disadvantages of different "mixes" of governmental, industrial, and other agency activity in this field.

Dr. Charlesworth:

The recommendations which follow are based on the assumption that our hosts are interested in the adduction of new items of knowledge relating to traffic accidents and also in the public implementation of proved proposals. These recommendations are cast in the form of actions to be taken by the President's Committee for Traffic Safety.

1. Invite each state legislative to send two delegates to a national conference, to last one month, to formulate recommendations to the several legislators dealing with enforcement and educational measures dealing with all aspects of traffic safety.

   Some areas of study might be these:

   a. Increase the effectiveness of the examination of drivers, both in scope and depth.
   b. Train local as well as state policemen in the handling of modern traffic on highways.
   c. Distinguish between accidents attributable to wrong attitudes (discomfort, aggressiveness, etc.) and those caused by lapses, and allocate punishments accordingly.
   d. Re-examine drivers every five years.
   e. Make public liability insurance compulsory, and fix rates beyond actuarial needs for repeating offenders.
   f. Exclude strictly private passenger cars from the busiest sections of large cities.
   g. Encourage informing by designated civilians.
   h. Give free driving licenses and a special form of card to drivers with good records.
   i. Cite good drivers in papers and over the radio.
   j. Limit the speed potential and horsepower of passenger cars.
   k. Increase the use of suspensions of license.
   l. Prohibit street parking in congested areas.

2. Persuade congress to make available, from public roads funds, adequate sums to engage in research on matters related to highway and street accidents.

   Some areas of study might be these:

   a. Make saturation studies of particular communities, and compare these with comparable communities not studied.
   b. Determine if there is a positive correlation between bad driver attitudes and American discourtesy in general. (In this, cultures and sub-cultures should be segregated, and communities and the state of conditions in certain foreign countries observed.)
   c. Ascertain the psychological etiology of accidents by intense and prolonged examination of participants in selected accidents.
   d. Ascertain the pattern of position and motion of cars in accident situations.
   e. Identify the principal errors in highway design which lead to accidents.
   f. Correlate the accident record of persons who have received high school training and the kind of training received.
   g. Learn what might be done to make passenger cars safer, by measuring manufacturers' attitudes, public acceptance, and the limits of sternness on the part of public officials.
   h. Ascertain whether deterrents to speed, like well-placed thank-you ma'ams, can safely be built into highways.
   i. Reconcile apparently inexplicably deficient accident statistics with the actual facts in the several jurisdictions.

Dr. Kelly:

1. The magnitude and gravity of the highway safety problem are such that as intelligent people we must undertake a bold and large scale corrective program. However, because of the lack of firm knowledge regarding the relative effectiveness (if any) of alternative proposals for corrective action, it is essential that the program be essentially experimental with ongoing evaluations of all modifications introduced. This required (a) substantial financial support for broad scale research programs, some of which are devoted to basic research and others to more practical matters; (b) willingness on the part of some communities and legislative groups to participate in field tests of experimental programs necessary to establish the basic knowledge required for wise longer term solutions to the problems of highway traffic safety. It appears that a clearing-house-function would contribute to the efficiency with which research monies and energies would be utilized.

2. The fatal accident is fortunately a relatively rare event,

but because of its low incidence as well as because it typically results from the confluence of several "causes," it is of dubious value as a criterion of traffic safety. Since a reliable and valid index of traffic safety is a *sine qua non* for all research leading to the evaluation of any programs designed to promote safety, it is recommended that a systematic program of research be undertaken to develop alternative criterion measures and ascertain the relationships among them. This recommendation has extremely high priority.

3. Driving an automobile on public streets and highways is a form of social behavior, a game of which must be played according to a set of socially accepted rules, if the game is to yield the maximum payoff for all participants. Since approximately nine out of every ten accidents involve a violation of one or more of these rules or laws, it may be concluded that the major precipitating cause of automobile accidents is a set of accident conclusive acts associated with violations of traffic laws. The unsafe driver is a bad citizen. His antisocial behaviors may result from a driver's ignorance of the law, a lapse of attention, or a conscious intent to break the law, but regardless of the cause of such violations, all such behavior is equally inimical to high-way safety and hence, anti-social. A frank recognition of the principle has direct implications for child training, driver education, and for law enforcement practices. Just as a gentleman behaves politely whether the situation demands it or not, the good citizen obeys traffic laws even though there is no other car in sight.
4. Since it is believed that driver behavior would be influenced in a favorable direction by making possible easy communication with fellow drivers in the immediate vicinity, it is recommended that a program of research be undertaken to evaluate the results of installing a simple two-way limited range inter-com system on all cars in a selected community.
5. Since much crude and unsafe driver behavior appears to result from the fact of anonymity an effort should be made to evaluate, in a selected community, the effect of publicity identifying the owner of all vehicles.

Dr. Koos:

1. Driver education (by whatever medium) has, or shortly will become, an essential in American life, and applicable to all who must drive. The auto is not necessarily the most useful instrument of transportation, and it is used because of its status value and its use to the individual as an instrument of power, etc. This value and meaning varies from one subculture or group to another, yet uniform educational techniques (quite meaningless in some instances and to some groups) are applied. Research is urgently needed to (a) determine the group (subculture) variations in the meaning of the automobile to the individual; (b) to determine these group concepts of authority and authority relationships as they relate to the use of safety measures.
2. The relative alarm and resultant action re morbidity and mortality varies from cause to cause (e.g., cancer high), with auto-engendered morbidity and mortality low—despite far greater exposure. It is impossible to sensitize population to safety measures unless we know why and among whom.

Mr. Larrabee:

1. Why is the car a non-social device?

   Hypotheses: It has been institutionalized historically to embody extraneous motivations (power, prestige, etc.) and to serve as a means of expressing them.

   Possible Research: A study of what automobiles mean to their owners, through detailed, but fairly open-minded interviewing.

   Objective: Diversion of such motivations away from the automobiles in future safety propaganda.
2. Why is much safety propaganda ineffective?

   Hypothesis: It is regarded as a limitation on the more powerful motivations embodied in the car.

   Possible Research: Study of same group as in (1) above through questions having a concealed relationship to safety and in re-interview, an overt relationship.

   Objective: Concoction of future safety propaganda in such a way as to evade or counteract conflicting motivations.
3. Why is the automobile an institution refractory to social restraints?

   Hypothesis: The automobile sub-culture has acquired such momentum as to escape from previous controls and has introduced strain and disequilibrium to a degree that seriously threatens our society.

   Possible Research: A study of those organizations which seek the good of the auto sub-culture to the exclusion of the general good.

   Objective: The substitution of a more rational method of arriving at decisions of optimum traffic, use of other forms of transportation, etc.

Dr. Lasswell:

Continuing Survey: Local Communities

1. A continuing research survey is needed to evaluate the relative effectiveness (and cost) of the measures of social action available to organizations whose objective is to reduce accident rates.
2. The research should be conducted under university or research institute auspices in order to get the full benefit of the disciplines concerned with the subject and to focus an approach free from the pressures that often characterize action organizations.
3. Local communities of various sizes (and composition) are one target of such research. Experimental and control communities can be paired; and experimental inputs can be varied from year to year.
4. As results are developed, they can be made available to action organizations.

Continuing Survey: Regions

1. Besides a continuing research survey of community targets, regional areas need to be studied from the same

point of view. In this setting the program will be less perfectly experimental than in the case of local communities, chiefly because of cost factors. However, by agreement with organizations, strategies can be agreed upon in advance and studied as they are applied. In some instances, it will be most expedient to focus upon a limited list of inputs in order to keep within manageable terms.

Continuing Survey: National

1. In addition to a continuing research survey of community and regional targets, the national area needs to be studied from the same viewpoint. At this level it will be even less experimental than at a regional level. By advance understanding with organizations it will be possible to follow strategies as they are applied. No doubt it will be expedient to focus upon special targets within the national field during a given period.

Encourage Independent Historical and Analytic Work

The problems of traffic can be put into the context of American social history and institutional growth by encouraging private scholarly investigations. There are reasons for believing that neither the scholarly community nor the public at large have taken these matters with the seriousness that is requisite to their understanding. Funds should be made available for independent scholarly work, as well as for team research.

The Encouragement and Discouragement of Risk Taking in U. S. Society

Traditionally American public policies, formal and informal have taken a double attitude toward risk. Our individualistic society has encouraged many forms of risk taking. Bold driving is no doubt an example. Our unwillingness to take safety too seriously probably calls for an examination of the whole context of risk. (Firearms, gambling, speculation, etc.)

The Significance of the Automobile in American Society

Legal, economic, political, familial, educational, scientific-technological, religious, rural, medical, standpoints.

Influence of Situational Norms Upon Driving Patterns

(Transmission in all groups of hazardous or responsible pattern.) (Adjustment on movement from one context to another.)

B. D. Paul:

Kind of Study: Studying factors variously associated with the acceptance and non-acceptance of safety measures on the part of groups and populations.

This is but one of many kinds of behavioral research. It assumes that certain effective measures for increasing traffic safety are known, but that these are not generally applied. The research challenge is to identify the combinations and sequences of circumstances that promote or hinder acceptance.

Method of Study: The approach would be essentially qualitative and descriptive and would work from specific cases to generalizations. At the outset there would be more dependence on the ingenuity of the investigation than on the tightness of the conceptual frame, although the aim is to arrive at a serviceable theory of social process. Three variations of approach suggest themselves:

a. Retrospective. Comparison of successful and unsuccessful instances. Example: what combinations of factors led auto industry to make safety locks standard equipment but not make safety belts standard equipment? What seem to be the critical differences?

b. Observation. Select several current and unresolved issues relating to adoption of safety measures; as a bystander, make continuous observation of the process by which the issue is decided in order to capture the decision-making process on the hoof.

c. "Experimental." Try to introduce a safety measure or measures in various communities or situations in order to observe the correlation of differential outcomes.

If all are tried they might best be initiated in the order given.

Object of Study: For any of the foregoing case study methods (recovering history, watching history, making history) the comparison groups or objects of study might be:

a. Political entities ("communities", e.g., towns, or states).

b. Formal organizations, e.g., auto industry or an enforcement department.

c. Social categories, e.g., a socio-economic class or an age group.

S. Valavanis:

I. Research proposals

1. Catalogue the costs of the automobile, especially indirect and non-monetary costs. Estimate the added costs occasioned by more cars, younger drivers, older cars, higher speeds, etc.

2. Tabulate the probability of accident by factor.

3. Study the rationale of differential insurance rates, both theoretically and as insurance commissioners argue about them in fact.

4. What's holding up the technologically most obvious accident-reducing and damage reducing reforms? Historical case studies.

5. Investigate padding of court awards, body and fender repairs, hospital bills, prompted by the pressure of insurance.

II. Action proposals

1. Train drivers not only for ideal but for emergency conditions.

2. Raise insurance rates and teach public they are largely traffic taxes for discouraging a public menace and not merely to raise revenue or to meet claims.

3. Periodic retraining of drivers at license renewal time.

A CRITICAL ANALYSIS OF DRIVER EDUCATION RESEARCH

by David H. Barnes and Jean Flanigan

THIS is a résumé of a full scale analysis of the existing research which evaluates the outcomes of driver education. The complete document* was prepared in 1956 by the NEA Research Division at the request of the NEA National Commission on Safety Education.

The assignment which the Commission made to Research Division was, . . . "to make a list of theses and other reports which deal with the outcomes of driver education instruction and to analyze and summarize these studies with the object of:

a. identifying the valid and reliable findings which were available for the guidance of classroom teachers and administrators and

b. defining the major areas where additional research might be needed."

Despite extensive correspondence and research the investigators found few studies which had not already been assembled and reported upon by other agencies.** (They did have a chance to read and analyze six interesting theses for advanced degrees, plus four more which came in too late for inclusion. And—this is to be expected—there were reports of 12 which were contemplated, or in progress).

However, this was the first educational agency to tackle the job of analyzing driver education research. An immediate question was, "Why this flurry of activity?" The following reasons seemed plausible:

1. Evaluation is an established procedure in education.
2. There is often a need to justify the inclusion of new subject matter areas or disciplines. In the case of driver education the following arguments are used:
   a. The curriculum is already crowded with "required" subjects.
   b. The complete program of driver education is expensive. Is this extra expenditure justifiable?
   c. Administrative difficulties develop in terms of staff procurement, scheduling, etc.
   d. Philosophical issues develop. Is it the function of the school to teach facts or to inculcate desirable citizenship attitudes? Has not the school already assumed too many functions of the home at the expense of the basic academic program?
3. "Proving the worth" of driver education may be associated with desirable publicity and hence personal and/or commercial advancement.
4. A knowledge of the effects of driver education is needed by the insurance industry.
5. Graduate study projects are afforded to teachers who are working in the traffic safety field.

In a broader sense the problem has been stated by Whitney,[1] a pioneer in safety education, as follows: "In a world in which there are so many important things to be done, a subject, to find a place in the curriculum, must not only develop knowledge and technique to meet some imme-

*National Commission on Safety Education, National Education Association. *A Critical Analysis of Driver Education Research.* Washington, D. C.: the Commission, 1957. 60 p.

**American Automobile Association. *Driver Education Proves Its Worth: Results of Driver Education Programs.* Washington, D. C.: the Association, 1955. 28 p.

**Lane-Reticker, Edward. *Driver Education in High Schools.* Chapel Hill: University of North Carolina, Institute of Government, March 1953. Reissued, January 1956. 79 p. (Mimeo.)

**Association of Casualty and Surety Companies, Accident Prevention Department. *Research on the Accident Reduction Value of High School Driver Education.* New York: the Association, June 1955. 69 p.

[1]Whitney, Albert W., and Meredith, A. B. "The Fundamental Significance of Safety Education." *The Present Status of Safety Education.* Twenty-Fifth Yearbook, Part I, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1926. Chapter 13, p. 327-48. (Quote is from page 328.)

diate situation but must also develop insights into the problems of life in general. Fortunately, the two things go together. The development of ability to meet some important and fundamental situation in life usually brings also these deeper insights. To determine whether the study of safety brings these deeper insights is however the real question at issue from an educational point of view."

The report was limited by the availability of data presented in the reports of the studies. These studies ranged from a simple announcement of results to a complete history and classification of each accident.

The computations of original studies were not checked. In some cases this could not be done; in others it was assumed that the computations were reliable.

Statistical analysis was not extended beyond that inherent in the experimental design of the individual study considered. In other words, if no test was applied to show the statistical significance of differences in performance between driver groups, none was applied. This is not to say that the results presented were not manipulated and rearranged in the process of testing hypotheses. In some cases information about the experimental design was scanty or nonexistent. Such facts as the criteria for matching groups or whether male and female subjects were isolated for comparison could not be ascertained.

The report did not presume to rank the studies discussed. Each study has had its place in the development of research in this field. The strengths and weaknesses of individual studies have served to lead to more comprehensive experimental design and rigor of control.

The problem of comparing, or ranking, or summating the studies proved to be a case in point. The authors, almost in jest, in trying to show that studies made on incomparable bases could not be compared, attempted just that. The reported accident records show an almost 100 percent difference between the driving performance of trained drivers in *two adjoining states!* The "jest," however, has backfired. The percentages in the table have been "averaged" and appeared in print as the "research" evidence for the overall worth of driver education.

Evidence for the overall worth of driver education, as supported by the prima facie evidence of the studies, is:

1. Most of the studies have found that the drivers who are graduates of a high-school course in driver education have fewer accidents and violations than drivers with no formal high-school course in driver education.

   The evidence presented in this report may be regarded as presumptive.

2. The amount of superiority shown for the trained drivers varied greatly among the studies. However, the studies which appear to have controlled a maximum of variables have found for trained males a superior performance of 30 to 50 percent for the initial period of driving. The exact percent does not seem as important as the fact that it consistently reflected superior performance.

3. The drivers who completed a course in classroom and practice driving instruction generally were found to have a better record than drivers whose course was limited to classroom instruction. The evidence here is strong.

4. It appears that the salutary effect of driver education is most evident in the early stages of driving. As experience increases, the performance of the trained and untrained drivers tends to equalize. Further investigation of the lasting effect of driver education is needed to establish generalizations in this area.

But larger implications for education and for research came out of this study. These follow.

The Problem of Youth and Accidents

There is conclusive evidence that youth is an accident-prone time of life. While the teen-ager's actual involvement in accidents is less than that of the group over 20 years of age, so is his exposure.

Despite the controversial nature of accident proneness there is no questioning the fact that some individuals are accident repeaters. The presence of a concentration of possibly unidentified accident repeaters in a group of drivers under study poses a problem in research design that existing techniques may not be solving.

The extent of youth's accident involvement and research findings about the personality structure of the accident repeater combine to present a tremendous challenge to the educator. There is an overwhelming inference that the devising of a truly effective program of driver education is no simple, cut and dried matter. All of the problems of education are here as in a microcosm. The need for a driver education that sticks is tremendous. Moreover, the significance of the deeply rooted nature of the accident repeater's personality and behavior problem may have been overlooked. It would be well if safety educators and guidance personnel on all levels of education organized for a cooperative attack on the problem. There is in such a direction a potential for a significant reduction of accidents which cannot be accomplished if the accident repeater is known mostly by his presence in the vice principal's office and not at all through his participation in a driver education course.

The Problem of Experimental Design

The problem of experimental design transcends, and perhaps supersedes, any other question raised in this report. Questions were raised as to the reliability of basic accident data and as to optimum sample size. The inadequacy of statistical treatment was cited. An attempt was made to support the idea that a controlled univariate experiment in the social science field is an incredibly delicate and subtle matter of design and execution. And it is a design that many contain an inherent predisposition toward failure. In a culture which follows, though slowly, the progress of the physical sciences and takes their methods as models for scientific inquiry, it is only natural that the controlled univariate experiment should have been appropriated for the social sciences. It is apparently not so well known that for the last 50 years these same physical sciences have been abandoning the concept of causality which postulated that particular kind of cause-effect relationship which permitted a univariate design. Causality in the physical world is now treated as a statistical concept about trends in a multivariate universe.

The possibility must be faced that the univariate experiment is passé in the social sciences. Complex though the swirl of atoms may be, so is the concatenation of processes

that determine that a particular person at a particular spot and on a particular day will have a motor vehicle accident. Consequently, if new experimental designs and statistical techniques are necessary to render some explanation of the processes of the physical world, may they not be necessary to measure so complex a human activity as traffic behavior?

This stage of this report may seem contradictory.

Why set up criteria by which to judge the studies and then condemn the criteria? The answer is that the studies had to be judged in terms of the traditional design which they accepted. Now the time is here to question the design.

Logically this question might have been raised some time past. Historically it was not. This is understandable. In a period of zeal to promote and justify a program it was easy to overlook the great distance between a study of teaching fractions by two different methods and an attempt to measure the behavior of two groups of drivers and isolate the factors bearing upon any differences in behavior. But to continue naive research at this period in the development of traffic safety education would be difficult to justify if there could be the widest possible effort made to disseminate a knowledge of the research already completed and the findings, limitations, and implications of that research.

How the Studies Met the Problem of Experimental Design

The studies met the frustrating problem of experimental design practically in the procedural order of their classification for this report:

a. simple trend studies,
b. comparative studies which did or did not attempt matching of control and experimental groups but which had no statistical correction for significance of reported differences in performance, and
c. studies which had elaborate techniques for simultaneous matching and conventional statistical correction for significance.

By and large their chronological order matches this classification order. One is tempted to say that they have gone down the avenue of greater rigor into the blind alley predicated by univariate experimental design. And yet each study was designed for a situation and a need and had to meet that need, expedient though it often was.

What the Studies Show and Imply

The studies show indisputably that those who have had driver education have better driving records than those who have not had driver education. The extent to which this particular educational experience was causal—and, hence, established a relationship between the two groups—has not been so clearly defined. This, in turn, probably has not been the fault of the program or of the studies but of the real limitations inherent in this type of research.

The more rigorously a study has matched or controlled the driving groups being compared, the smaller have tended to be the differences in performance. But this difference remains. On the gross level it is empirically justifiable to say that traffic safety education has accident-reduction value. The extent of this reduction, as yet, is indeterminate and will alter with local circumstances and through time.

The driver education program in the secondary schools of the United States operates within a cultural context of traffic safety education. This larger program through a variety of devices has steadily involved an increasing emphasis on public traffic safety education, law enforcement, and highway improvement and construction. There is little doubt that this program has played a major part in the reduction of the nation's fatality rate per 100,000,000 vehicle miles from 16.7 in 1934 to 6.4 in 1955. This, in a time of vastly increasing world tensions, is a notable achievement. In addition, there is no way to know what might be the irreducible minimum for accidents within the culture of this country. For it is a culture which stresses competition (and hence aggravates the need for adventure), which prolongs the processes of maturation of the young and their assumption of responsibility, and which perpetuates a kind of pioneer anarchy in which each man feels impelled to judge for himself the equity of a particular law and his culpability under that law as he reads it to himself.

The difference in performance between the driver who has been educated and the driver who has "just learned how" tends to become less over a period of time. Initially, driver education seems to have a salutary effect. The problem is to keep education ahead of the culture, particularly the age group culture of youth.

Conclusion

The evidence of this report shows clearly the extreme difficulty of scientifically measuring so complex and complicated a phenomenon as driving behavior. At the same time, the contention that a traffic safety education program reduces accidents is a plausible one. Therefore, more practical advances in driver education might come through diverting research energy, talent, and money into ways of improving the existing program of instruction and, concurrently, into a program of research directed toward acquiring a better knowledge and understanding of those human factors—culturally operative—which create accidents. If a program of driver education is to succeed in changing behavior, it must be based on a better knowledge of how behavior develops and how behavior may be changed.

This report is again, on the surface, contradictory. The burden has been that the present studies are inadequate scientifically, that new and unused techniques must be developed to prove the case. Now it is inferred that the case has perhaps been proved after all.

This is not a major contradiction. The vast experience of the American people in mass education has been that a good school teaches better than a poor school and a poor school better than no school at all. On this empirically derived feeling, free public education exists. The curriculum of the school is determined by a feeling for, or an awareness of, those things which are of most worth. It is culturally determined. Traffic safety education is a demonstrated and expressed cultural need just as the humanities, the sciences, and adventure into mathematics. But just as no school may go far ahead of those standards set by the society which creates it, so may no program of safety education run far ahead of the safety practices of the complex, sustaining cultural milieu.

REPORTED DRIVING SPEEDS AND PREVIOUS ACCIDENTS

by Roger G. Stewart

CONSIDERABLE emphasis is being directed today toward fast driving as a major cause of accidents. In the writer's opinion, two factors have been primarily responsible for this emphasis: a knowledge of certain statistics which purport to show that speeding violations are frequently involved in automobile accidents, and a desire by safety officials and other interested individuals to find a satisfactory and feasible solution for the nationwide problem of accidents. Statistics often refer to a tabulation of "causes" of accidents shown in official accident reports. To illustrate, statistics gathered from various sources annually by the National Safety Council have suggested that speeding violations and/or driving too fast for conditions may be associated with 25 per cent or more of all serious accidents (1). The data in accident reports and summaries are subject to some unreliability and uncertainty; yet these statistics provide some basis for the current attention being given to speeding as a major factor in automobile accidents.

One shortcoming of the data in accident reports will be indirectly examined in this paper: that no information is given about speeding violations or fast driving speeds *without* the occurrence of accidents. How often does high-speed driving fail to lead to an accident? Is fast driving in itself, on a percentage basis, as likely to involve the driver in an accident as other traffic violations such as turning from improper traffic lanes or slowing down suddenly in traffic without sufficient warning? If one concedes that fast driving does not always lead to an accident, then the problem may be conceived as a comparison of fast vs. slow driving in relation to accidents. In this paper, some research findings from official traffic records are presented for individuals in the younger age groups in relation to their reported driving speeds.

The author is a member of the staff of the Institute of Transportation and Traffic Engineering, University of California, Los Angeles. He wishes to acknowledge the assistance of the following individuals during this study: Dr. Harry W. Case, Department of Engineering, University of California, Los Angeles; Mr. Paul Mason and Mr. Fred P. Williams, Department of Motor Vehicles, State of California, Sacramento; Dr. T. H. Southard and Mr. F. H. Hollander, Numerical Analysis Research, Department of Mathematics, University of California, Los Angeles.

These findings have been reported in Volume 41, No. 5 of the *Journal of Applied Psychology*, 1957.

Method

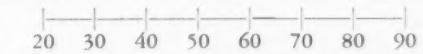
Subjects

The subjects were 275 students in psychology classes at the University of California, Los Angeles, during 1955 and 1956. Most subjects had been driving in California for two years or more. The subjects were fairly evenly divided regarding sex, and the median age was about 21 years.

Driving Inventory

All subjects were administered a driving inventory. This inventory contained items of various types on one's personal driving habits and experiences. Four items of the inventory referred to driving speed on the highway in specified conditions. These four items on driving speed were used for classifying the 275 subjects in terms of speed. One item was the following:

What is your usual highway driving speed (MPH) during daylight?



Each subject was instructed to indicate his response on a continuum similar to those used in numerical rating scales.

Procedure

Determining Speed Groups. The subjects were classified in terms of driving speed by use of a simple summation of the numerical values on the four speed items. The four values per subject were summed to yield a total for each subject, and the 275 individual totals were ranked in order. Then, cutting points were found to yield the upper and lower one-third of the 275 cases. The 89 subjects in the upper groups were called *"fast"* drivers, and the 89 individuals in the lower group were named *"slow"* drivers, leaving 97 people who were referred to as *"medium"* speed drivers.

Determining Violators. After the testing, the official records of traffic citations and accidents for all subjects while driving in California were obtained from the Department of Motor Vehicles in Sacramento, California. Records for nine individuals that could not be clearly identified were not included in the sample of subjects reported here. Using the official records, the 275 subjects were classified as violators or nonviolators concerning speeding offenses as well as all moving or traffic offenses. Fifty-seven of the 275 subjects had received one or more citations for speeding in California, and a total of 103 individuals (including the 57 violators of speeding offenses) had been given one or more citations for a traffic offense of some kind.

Results

Individuals With Accidents

Table 1 shows the number and percentage of individuals in each of the three speed groups with prior recorded accidents in California.

Table 1 shows that approximately equal percentages of subjects in the three speed groups had been involved in accidents during the period considered. Assuming random sampling from a common population, the chi square for the frequencies shown in Table 1 equals only .75. This indicates, therefore, that involvement in accidents for these subjects is independent of their speed classification based on the inventory responses. This fact suggests that attention direct toward individuals for speeding or fast driving will not substantially reduce the total number of accidents for this type of driving population.

Individuals With Speeding Citations

The importance of the above finding depends partly on whether the method of classifying the subjects in terms of speed has considerable validity. This, in turn, relates to the use of inventory responses for classification purposes. To explore this question, the number of subjects with one or more citations for speeding offenses was determined for each speed group. These results are shown in Table 2.

Table 2 shows that the percentage of subjects with speeding citations increases progressively from the *slow* to the *fast* group. Of the 57 individuals with citations, 34, or more than half of them, had been classified as *fast* drivers. Chi square for the contingency table of frequencies for all three groups is 25.72, which far exceeds 9.21, the value required for significance at the .01 level. This means that the subjects were classified with respect to prior speeding citations more accurately than one would obtain by chance. This result indicates some validity for our findings concerning the grouping of subjects into the speed groups and, therefore, concerning individuals with previous accidents in the speed groups.

Individuals With Traffic Citations

Further results show that the subjects, as classified into the speed groups, tend to have records of traffic citations consistent with their classification. Table 3 shows the number and percentage of subjects in each speed group

Table 1

RELATIONSHIP OF INDIVIDUALS WITH AND WITHOUT PRIOR RECORDED ACCIDENTS TO SPEED GROUPS

Speed Groups	N	No Accidents	One or More Accidents		Percentage One or More
SLOW	89	73	16		18
MEDIUM	97	81	16		16
FAST	89	70	19		21
Total	275	224	51	Mean	19

Table 2

RELATIONSHIP OF INDIVIDUALS WITH AND WITHOUT PRIOR SPEEDING CITATIONS TO SPEED GROUPS

Speed Groups	N	No Speeding Citations	One or More Speeding Citations		Percentage One or More
SLOW	89	81	8		9
MEDIUM	97	82	15		15
FAST	89	55	34		38
Total	275	218	57	Mean	21

Table 3

RELATIONSHIP OF INDIVIDUALS WITH AND WITHOUT PRIOR TRAFFIC CITATIONS TO SPEED GROUPS

Speed Groups	N	No Traffic Citations	One or More Traffic Citations		Percentage One or More
SLOW	89	72	17		19
MEDIUM	97	63	34		35
FAST	89	37	52		58
Total	275	172	103	Mean	37

who had received one or more citations for a moving traffic offense (including speeding offenses).

Table 3 shows a progressive increase from the *slow* to the *fast* group. Half of the 103 individuals with traffic citations had been classified into the *fast* group. Chi square equals 29.76, which far exceeds the tabled value at the .01 level. This result is additional evidence that the inventory responses have some validity for the grouping of the 275 subjects in terms of speed.

Relationship Between Speeding Citations, Traffic Citations, and Accidents

The result just presented show that the individuals classified as *fast* drivers had not been involved in accidents more often than the *medium* speed or *slow* drivers. However, it is still possible that the use of some other method would support this commonly accepted belief. For example, one might maintain that the subjects with previous citations for speeding constitute the *fast* drivers, and that these people would show more involvement in accidents than the subjects without speeding citations. Using this criterion, the 275 subjects were grouped regarding speeding citations (none vs. one or more) and accidents (none vs. one or more), and chi square was computed to test the independence of these two variables. This is shown in Table 4.

Table 4 yields a chi square of only 2.83, which falls far short of 3.84, the required value for significance at the .05 level.

Turning to total traffic citations, the same outcome is obtained, chi square being 1.56. In other words, previous involvement in accidents for the subjects could not have been predicted with any success from knowledge of prior speeding citations or total traffic citations.

Discussion

Our results fail to show that a significantly higher percentage of the faster drivers, considered by the speed classification and by speeding citations, had become involved in accidents than slower drivers. State positively, the individuals in the group of *fast* drivers and those subjects with speeding citations appear to be as safe as the other drivers. No basis was found for concluding that involvement in accidents is related to stated driving speeds on the open highway or to citations for speeding offenses. For these subjects, previous involvement in accidents seemed to be independent of these two factors.

Evidence was presented for the validity of our grouping of the drivers into the three speed groups. Significant differences were found between the *fast* and the *slow* drivers in speeding citations and in total traffic citations. This means that the *fast* drivers were, in part, those whom many people would expect to become involved most often in accidents. In each instance, however, it was found that the subjects with one or more prior citations were not different from the subjects without citations in terms of accident involvement. This finding does not seem to be consistent with the commonly accepted views that traffic violators and fast drivers in the younger age groups constitute the chief hazard to safe driving on our highways.

Throughout this discussion, no mention has been made of the distinction between being involved in an accident and "causing" it, since the official records indicated only whether the individual was a driver involved in a reported accident. While more facts about each accident would be desirable for some purposes, the judgment of probable cause or "fault" of each accident from such information, even by psychologists (!), would be highly subjective.

In conclusion, the results of this study suggest that individuals in the kind of population considered who report consistently higher driving speeds than average have traffic records free of accidents as often as other drivers. This finding also holds for individuals with previous speeding citations and traffic citations of all kinds. If these results should be verified with drivers in the general public, they would certainly command some re-examination of certain emphases and enforcement procedures based on the belief that high-speed drivers become involved in accidents more often than medium-speed or slow drivers.

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Table 4

RELATIONSHIP OF INDIVIDUALS WITH SPEEDING CITATIONS AND ACCIDENTS

	No Speeding Citations	Speeding Citations	Total
Accidents	36	15	51
No Accidents	182	42	224
Total	218	57	275

$x^2 = 2.83$ (not significant at .05 level).

A DEVICE FOR ESTABLISHING A SAFE STOPPING DISTANCE AT NIGHT

by Clifford O. Swanson,
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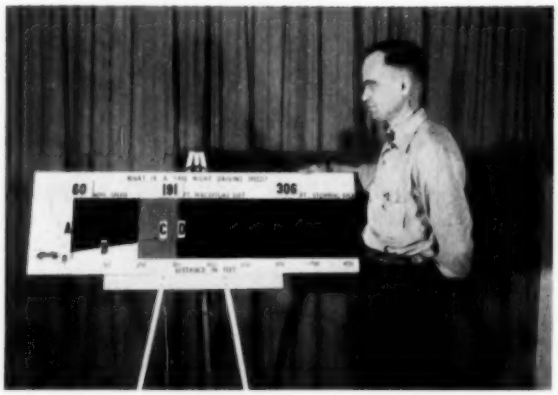
THAT a safe driving speed at night should be considerably lower than that in daylight is attested by the fact that on a mileage basis about nine times as many accidents occur during hours of darkness as occur during daylight. Some states have differential day and night speed limits. This is advisable but in most cases the differential is not great enough. In other states, using the basic speed law, it is extremely difficult to demonstrate before a court, law enforcement personnel or public group what is meant by a safe nighttime driving speed.

Considerable research has been done at the Driving Research Laboratory at Iowa State College to assemble useful data on this problem. That the approach is valid is shown by the fact that the (former) Commissioner of Public Safety for Iowa, Clinton H. Moyer, through the Highway Patrol and the courts of the state, has been able to establish a maximum speed limit in mph under the basic statute during hours of darkness. This was upheld by a ruling by the Iowa Supreme Court. The data upon which the decision was predicated comes from standard information and researches of various experimenters throughout the country. No attempt will be made to review the literature here.

While acting as a special instructor for the highway patrol and in presenting the data on safe nighttime driving speeds in court cases, the author hit upon the method of presentation to be described. It was first necessary to define each term used in such language as to be understood by the average man or woman on the jury.

The ruling handed down by the Iowa Supreme Court in their decision last spring, upholds the Public Safety Commissioner's contention that any driver traveling at a nighttime speed in excess of 65 mph is presumed to be violating the basic speed limitation statute of being able to stop within the assured clear distance ahead.

When attempting to demonstrate to a jury the various factors to be considered in a safe nighttime driving speed it seems helpful to make a visual demonstration of the principles involved whenever possible. In the instruction



of highway patrol officers and recruits, driver education students and interested public groups, our graphic device has proven very beneficial as a visual aid.

Apparatus Used

In general the apparatus used is in the nature of a slide rule of enlarged dimensions which can be set on an easel and used to explain stopping distances as determined by the formula:[1]

$$\text{Stopping distance} = \frac{V^2}{30f + 0.3p} + 1.467\,VT$$

where V = speed in mph
f = coefficient of friction
p = per cent gradient of road surface expressed as a whole number
T = reaction time in seconds

Its relationship to perceptual distance at night is based on data developed by Roper and others.[2] Their data have been studied and adapted to the slide rule device herein presented.

In the present instance, as shown by the illustration, perceptual distance B, is given as 191 feet. This distance represents the number of feet a driver with normal vision would be expected to see an object of at least a 7 per cent reflection factor on lamps as found on most modern auto-

The study was made possible through a grant from the Allstate Insurance Company on driving research, and done under the direction of Dr. A. R. Lauer of the Driving Research Laboratory, Iowa State College.

mobiles. Calculations are made for a speed of 60 mph. The atmospheric conditions are presumed to be clear. Otherwise corrections can be made.

The beam candlepower of the new quadri-lights is not known but statutes in Iowa and some states are patterned after Section 12-226 Number of Driving Lamps Required or Permitted, of the revised 1954 version of the Uniform Vehicle Code, which permits "not more than a total of four of any such lamps on the front of a vehicle shall be lighted at any one time when upon a highway." However, it is a requirement that the total beam candlepower will remain within legal provisions. At least one manufacturer is making the quadri-lights standard equipment while for most others they will be optional on cars delivered in states where they are legal. The apparent assumption being that those states making them illegal, or at least not providing for their use, will not enforce the statute provisions.

A road user with average reaction time and traveling on a dry, level concrete road surface at 60 mph would be able to stop in a minimum of 306 feet. The difference, represented by C in the illustration, then becomes the danger zone, since stopping distance exceeds the perceptual distance at this speed and under these conditions as given. Any set of values may be used for demonstration purposes. The principle illustrated is but one example. Both the values for perceptual distance and stopping distance were obtained from formulas and data previously cited.

Point A on the board represents a zero line at which a driver receives the initial warning or stimulus in the process of stopping his vehicle. Space B then becomes the perceptual distance of the driver with possible corrections made for his visual acuity and the atmospheric conditions as they exist for a given beam headlight candlepower. Since older car lights are likely to be deficient in some respects, 40,000-50,000 candlepower on high beams can be considered to be the average to be expected on the road prior to making the above corrections. However, any strength of beam candlepower could be used for calculations as shown in tables or graph of perceptual distance for varying amounts of light.

The space A to D represents the distance required to stop a vehicle for a given set of conditions. This value takes into consideration the reaction time of the driver, road gradient in per cent and the friction coefficient of the road surface assuming 100 per cent brake efficiency.

A safe night driving speed for the driver under the existing conditions as found can be established. This is represented in miles per hour whereby a stopping distance AD would be equal to or less than distance B. In other words, the C space as illustrated, would be completely eliminated when such a speed is maintained, assuming the variables involved remain constant. These values, as calculated, make no allowance for a safety factor, however. Most engineers would allow a 100 per cent margin of safety. This can be taken into consideration by being given judicial notice by the courts, often a necessary detail in court procedures.

The differences, as represented by the danger zone C, are far too prevalent for drivers traveling on the road at night as is attested by nighttime accidents over those occurring during daylight on a mileage basis. Considering an average of 40,000 beam candlepower for the lower-most distribution of light, 100 per cent brake efficiency and considering other variables as normal, no nighttime road user should exceed 50 mph.

General Summary

The method used in establishing a safe stopping distance at night and its conversion into miles per hour, considering the existing light conditions, was devised originally at the request of Iowa's (former) Commissioner of Public Safety, Clinton H. Moyer, for purposes of enforcement of the basic speed limitation type statute. Since no known method of obtaining specific values indicative of a safe and legal nighttime speed for single vehicles was available and that was applicable in the enforcement of the "reasonable and proper" aspect of this type speed law, the present system was devised.

Even though Roper and Howard[3] in their experimentations had determined what is being termed here as perceptual distance for various beam candlepower values, a method of application was necessary. Certain corrections are necessary in the original values as given to compensate for the conditions as they exist in an actual situation. For example, correction in the perceptual distance of a road user is necessary should his visual acuity be less than normal or atmospheric conditions be other than clear. Stopping distances are determined as previously cited[4] with corrections being applied as they exist at the time and place of apprehension.

While acting as a special instructor of highway patrol personnel, the difficulty was encountered of satisfactorily explaining the methods of demonstrating perceptual and stopping distances and how changes in one effected the other. The same problem persisted while serving as an expert witness in litigation and when making talks to public groups. As a result, the visual aid device described was devised. However, no attempt has been made to have the aid admitted into the court records as a method of explanation to a jury. Precedence frequently may nullify the advantage of such a gesture.

The apparatus can be described as one whereby the data from scientific experiments may be reduced to graphic representation in showing the dangers of excessive night driving speeds to laymen. This application of the principle involved has been upheld by a unanimous decision of the Iowa Supreme Court.

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A BIBLIOGRAPHY OF MOTORISTS' VISION MATERIALS

Prepared by Miss Edna Windau, M.A.

THIS comprehensive listing of references deals with all types of studies of motorists' vision. Some of the articles are quite technical and scientific; others are written in an interpretative manner for a lay audience.

None of this material is available from the National Safety Council. Anyone wanting copies of particular articles can request them from the following sources:

1. **Articles marked with an asterisk (*) should be requested directly from the author or the publishing journal.**
2. **All articles *not* marked with an asterisk may be obtained from:**
   Committee on Motorists' Vision and Highway Safety
   American Optometric Association
   4030 Chouteau Avenue
   St. Louis, 10, Missouri

The articles are presented by alphabetic title listing, and no further effort has been made to subdivide the original broad classification of motorists' vision.

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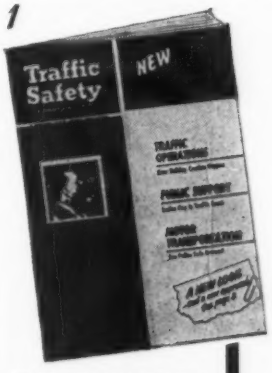

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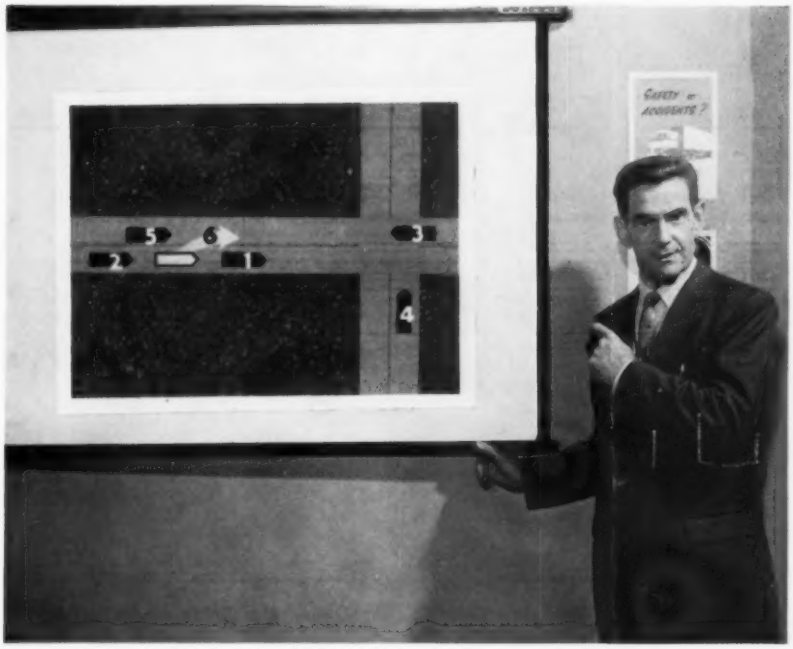

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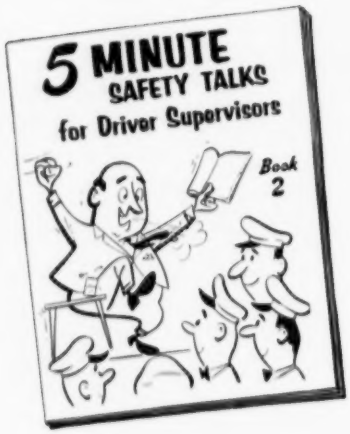

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These talks were prepared by Russell FitzPatrick, one of today's most colorful, original, and authoritative writers on the subject of driver selection, training and supervision, and the problems of motor fleet management. Now an independent consultant on fleet operations, FitzPatrick was on the faculty of Texas A. and M. College where he taught courses in fleet operation. He has appeared as an instructor on many fleet supervisor training courses throughout the country and has had wide practical experience in the field of fleet safety supervision.